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BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Founded by HENRY E. SIGERIST

Editor—OWSEI TEMKIN

VOLUME XXVI MAY–JUNE, 1952 NUMBER 3

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THE JOHNS HOPKINS PRESS
BALTIMORE 18, MARYLAND

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Editor—OWSEI TEMKIN

Manuscripts, review copies of books, and correspondence relating to the publication of papers should be addressed to The Editor, Bulletin of the History of Medicine, 1900 E. Monument St., Baltimore 5, Md.

Contributors of articles will receive 25 reprints without covers free of cost. An order form for additional reprints, giving the cost, is sent with the galley proof to each contributor and must be returned promptly to the Editor.

The Bulletin is published bimonthly. One volume of at least 500 pages is published during the year. The subscription rate is $6.00 a year in the United States and its possessions; $6.25 in Canada; and $6.50 in other foreign countries. Single numbers of the current volume when available are $1.25 each. Prices for back volumes and back single issues may be had on application. Volume I is out of print. New subscriptions are entered to begin with the first issue of the current volume.

Active and Corresponding Members of the American Association of the History of Medicine receive the Bulletin on payment of $6.00 annual dues, of which $5.00 ($5.50 in the case of Corresponding Members) are for a year's subscription. Constituent Societies pay $10.00 annual dues, of which $6.00 are for a year's subscription to the Bulletin.

Claims for replacement of missing numbers must be received within 3 months (6 months in the case of foreign subscribers) following publication of the number.

Supplements to the Bulletin are published at irregular intervals and are sold individually, subscribers to the Bulletin being granted a reduction of price.

THE JOHNS HOPKINS PRESS

BALTIMORE 18, MARYLAND, U. S. A.

PUBLISHED BIMONTHLY

January-February, March-April, May-June, July-August, September-October, November-December

Made in United States of America

Entered as second-class matter January 3, 1935, at the post office at Baltimore, Maryland, under the Act of March 3, 1879.

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THE ELUSIVENESS OF PARACELSUS *

OWSEI TEMKIN

Two of the greatest historical figures of the medical past are also among its most elusive ones. The literature on Hippocrates and Paracelsus is abundant just because it is provoked by so many unanswered questions. In the case of Hippocrates, this is easy to understand. Of his life we know barely more than that he was a contemporary of Socrates, born on the island of Cos, a teacher of medicine, well known in his days. Of the more than 60 books that go under his name, none can be attributed to him with certainty. And from the scanty remarks of Plato, the basic tenets of his theory do not emerge with unequivocal clarity or any degree of completeness. Thus the elusiveness of Hippocrates is grounded in a paucity of facts.

The same cannot be said of Paracelsus. Although there are very important gaps in our knowledge of his life, the data at our disposal are by no means negligible. He was born ca. 1493 in Einsiedeln, Switzerland, of a father, Wilhelm Bombast of Hohenheim, who was a practicing physician, and of a mother who was subject to the monastery of Einsiedeln. Around 1502 father and son moved to Villach, a town near the important

* Read at the New England Conference on Renaissance Studies, Harvard University, May 9, 1952.

mining centers of Carinthia.[1] Then, it is true, we have a large gap until we meet Paracelsus in Salzburg where, in 1525, he was suspected of involvement in the peasants' war.[2] In 1526 he planned to settle in Strasbourg where he acquired citizenship. The register refers to him as "Theophrastus von Hohenheim der Artzney Doctor. . . ."[3] But the next year he moved to Basel where the city government had called him as town physician and professor. In Basel he stayed from March 1527 till February 1528 when he had to flee in order to escape arrest by the authorities whom he had attacked after previous quarrels with the other doctors and a patient.[4] His itinerary during the succeeding thirteen years is fairly well known. There are his wanderings in southern Germany, St. Gall, and elsewhere in Switzerland, his visits to Vienna and Carinthia, and finally his death in Salzburg in 1541. Even the texts of his will, and of the inscription on his tomb, where the name Philip appears instead of the heathenish Theophrastus, have been transmitted.

There are many more details of his life which we know for certain, even the appearance of the man is preserved in at least two authentic portraits by August Hirschvogel from 1538 and 1540. At any rate. this very short outline shows that Paracelsus' biography is not a mere fragment to us. And concerning his writings—the medical, scientific, and philosophical works, genuinely Paracelsian, fill 14 volumes in the edition by Sudhoff. The theological writings are not as easily accessible; their edition has not proceeded beyond one volume in the parallel series.[5]

In short, compared not only with Hippocrates but with many others, Paracelsus leaves us in a fortunate position. And yet he has remained elusive as a man, and as a medical thinker. Why?

The fight about the personality of Paracelsus began in his own lifetime. He had followers and admirers as well as enemies and detractors.

[1] *See* Karl Bittel, Die Kindheit Theophrasts in Einsiedeln, *Nova Acta Paracelsica*, 1944, vol. 1, pp. 37-44.

[2] *See* Karl Sudhoff, *Paracelsus*, Leipzig, Bibliographisches Institut, 1936, p. 17.

[3] *Ibid.*, p. 22, and Ernest Wickersheimer, Paracelse à Strasbourg, *Centaurus*, 1951, vol. 1, pp. 356-365. This article is very interesting since it re-publishes the entire record of Paracelsus' testimony given at Basel concerning a law suit taking place in Strasbourg (see below), and publishes, for the first time, the diary entries of Nicolas Gerbel of Strasbourg concerning his consultation of Paracelsus.

[4] Albrecht Burckhardt, Wie lange und in welcher amtlichen Stellung war Paracelsus in Basel? *Correspondenz-Blatt für Schweizer Aerzte*, 1914, vol. 44, pp. 356-368.

[5] Theophrast von Hohenheim, gen. Paracelsus, *Sämtliche Werke*. 1. Abteilung: Medizinische, naturwissenschaftliche und philosophische Schriften, herausgegeben von Karl Sudhoff. 14 vols., Munich, 1922-1933. 2. Abteilung: Theologische und religionsphilosophische Schriften, herausgegeben von Wilhelm Matthiessen. 1 vol., Munich, 1923.

By the end of the 18th century, the enlightened Dr. J. G. Zimmermann could write of him that "he lived like a pig, looked like a coachman and took most pleasure in the company of the loosest and lowest mob . . ." and that "all his writings seem to have been written during intoxication." [6] Romanticism of the early 19th century found new sympathies for Paracelsus, and the racism and nationalism of recent years made him a heroic figure of phantastic proportions. But those who wish to avoid condemnation and adulation of Paracelsus and who wish to study him objectively, find themselves confronted with a great difficulty. Paracelsus himself is the main source for his evaluation, and almost at the outset we seem forced to take this source on trust or to reject it. One example may suffice to illustrate the situation. As early as 1527 in his Basel program, Paracelsus called himself "Doctor of both medicines," [7] which meant doctor of medicine and surgery. Did he really possess the degree of a medical doctor? No diploma has been found, no entry in the matricles of any university. But why doubt his assertion? Because his colleagues at Basel had already spread rumors of its non-existence [8] and because Paracelsus later also called himself Doctor of Holy Writ,[9] although certainly he was no doctor of divinity. Then why accept his medical degree? Because when called as a witness in a lawsuit, according to the record he testified upon the oath which he had sworn at the University of Ferrara upon his doctorate. The actual record of this testimony was

[6] Walter Artelt, Paracelsus im Urteil der Medizinhistorik, *Fortschritte der Medizin*, 1932, vol. 50, no. 22. Zimmermann's judgment obviously goes back to Oporinus' letter to Weyer.

[7] "utriusque medicinae Doctor ac Professor"; ed. Sudhoff, IV, p. 3.

[8] In a draft of his report to the city council of Basel, summer 1527, Paracelsus complained that some doctors "reden mir auch schmelich zu, man wiss nit, woher oder ob ich doctor sei oder nit,—mit beger inen im collegio auf ir fragen zu antworten etc." (ed. Sudhoff, IV, p. 153). This passage apparently has been understood as implying that Paracelsus could not present a diploma, an inference which, as Burckhardt, *l. c.* p. 364, has pointed out, is not compelling. Paracelsus complains about the rumor as if it were a libel. The incident at Sterzingen where Paracelsus was denied recognition as a doctor is explained by him as due to the mayor's never having seen doctors "in zerissen lumpen an der sonnen braten." (Ed. Sudhoff, IX, p. 562). The mayor did not believe Paracelsus—with or without diploma.

[9] See Henry M. Pachter, *Paracelsus*, New York: Henry Schuman, 1951, p. 58, and K. Goldammer, Neues zur Lebensgeschichte und Persönlichkeit des Theophrastus Paracelsus, *Theologische Zeitschrift*, 1947, vol. 3, pp. 191-221. Goldammer has collected all passages where Paracelsus refers to himself as a teacher of theology and explains them as consequences of Paracelsus' doctrine of religious office. "*Sein 'Doctor der Heiligen Geschrift' ist eine religiöse Amts- und Gemeindeaufgabe*, die er sich gestellt wusste, *kein Universitätstitel*" (*ibid.*, p. 206).

rediscovered by Burckhardt [10] and it thus seems established that Paracelsus received an M. D. degree at Ferrara—provided of course that we are willing to accept his word. The question is not without interest. A Paracelsus who went through the medical curriculum of his days and the Latin disputations required would be a rebel like Luther to whom he was likened during his life-time. A Paracelsus who decked himself with clothes which he never possessed and then attacked all rightful bearers of these same clothes would be a suspicious fellow indeed.

We may go further and even ask whether Paracelsus really was as successful in his cures as is generally assumed. What do we really know about them and how are we to judge? [10a] To hear Paracelsus speak, the doctors of his time were inefficient compared with himself,[11] and the very inefficiency of contemporary medicine was one of the main points of his attack. This may well be, but does not prove his own prowess. Of his therapeutic maxims as they appear in his books, some are excellent, others are mere superstitions as judged by any modern standard. Therapeutic maxims prove neither cures nor malpractice. Oporinus who, for some time, was Paracelsus' amanuensis praises his master's great skill in the treatment of various diseases.[12] In 1526, Paracelsus cured the publisher Froben, a feat which redounded greatly to his fame; but a year later Froben was dead, killed by poisonous remedies, Paracelsus' enemies whispered.[13] Some of Paracelsus' consilia for patients are not very enlightening; his letter to Erasmus in which he diagnosed the humanist's state of health is hard for us to understand and was not entirely under-

[10] Albrecht Burckhardt, Nochmals der Doktortitel von Paracelsus. *Correspondens-Blatt für Schweizer Aerzte*, vol. 44, 1914, pp. 884-887. The whole record is now conveniently found in Wickersheimer, *op. cit.*

[10a] Th. Oettli, Paracelsus und St. Moritz, *Schweizerische medizinische Wochenschrift*, 71, 1941, pp. 1121-1125, has put the question very well (p. 1124): "Dieser Mann, der so treffliches über die Grundlagen des Arzttums geschrieben hat—war er selber ein grosser Arzt? Sicher ist, dass ihm manche Heilung da glückte, wo vor ihm andere Aerzte sich umsonst bemüht hatten. Aber es muss schon zu seinen Lebzeiten schwer gewesen sein, ein Urteil über sein Können zu gewinnen. Er zog von Stadt zu Stadt, von Land zu Land, nirgends Fuss fassend. Für einen Arzt bedeutet dies, dass er selten oder nie in die Lage kommt, den Grad und die Dauer seiner Heilungen zu kontrollieren."

[11] Preface to Paragranum, ed. Sudhoff, VIII, p. 34: ". . . und die grossen cur, so ich durch vil königreich, sprach und lendern treffentlichen bewiesen hab uber ander arzt, uber ir patronen und all bücher, und curas volbracht, die inen in allen iren büchern nicht müglich waren."

[12] The entire letter of Oporinus is to be found in German translation in Sudhoff, *Paracelsus*, p. 46-49.

[13] R. Julius Hartmann, *Theophrast von Hohenheim*, Stuttgart and Berlin, Cotta, 1904, p. 60.

standable to Erasmus either.[14] A few neutral references to the treatment of patients, neutral because not designed to enhance or to belittle Paracelsus, do not allow one to draw any inferences, perhaps because of their brevity and paucity. He seems to have set great store by urinoscopy as evinces from the records of his examinations of Claus and Gerbel in Strasbourg.[15] In the legend, Paracelsus survives as a great healer, but legend also celebrates him as a great sorcerer.[16]

It is admittedly difficult to judge the results of any medical practice of the past, and to raise the question as to Paracelsus' success does not necessarily mean to deny it. Yet these and other questions have to be asked in order to make us realize how elusive his personality has remained. It must be added that our uncertainty is not helped by a historical method that has constructed an imaginary route of his travels from the mere mentioning of place names in his works regardless of the context, and that makes him a "feldscher" in the army of the low countries because of some vague reference to his deeds during the Netherlandish and other wars.[17] The same doubtful method has traced the development of his youth from some autobiographical remarks which are given without any clear references as to the periods of his life.[18] Unfortunately, the literature on Paracelsus abounds in uncritical constructions, assumptions, and interpretations. Here, critical objectivity could at least help to remove some of the fog.[19] But critical objectivity will still have to reckon with the ambiguity which

[14] For the consilia *see* ed. Sudhoff, IX, p. 661 ff.; X, p. 1 f. and 574 ff.; XI, p. 279 ff. For the letter to Erasmus *see ibid.*, III, p. 379, and for Erasmus' reply, Sudhoff, *Paracelsus*, p. 24 f., and Pachter, *op. cit.*, p. 146 (English translation).

[15] *See* Wickersheimer, *op. cit.*, pp. 357 and 359.

[16] Article "Paracelsus" in *Handwörterbuch des deutschen Aberglaubens*, vol. IX, Berlin, 1941, col. 59 ff. *See* also Donald Brinkmann, Mythos und Logos im Weltbild des Paracelsus, *Nova Acta Paracelsica*, I, 1944, pp. 109-134.

[17] As far as I can see, the claims for Paracelsus as an army surgeon rest mainly on the passage in the Spital-Buch, ed. Sudhoff, VII, p. 374: "dieweil ich auch im Niderland, in der Romanei, in Neapolis, in Venedischen, Denemerkischen und Niderlendischen kriegen so treffentliche summa der febrischen aufbracht und ob den vierzigerlei leibkrankheiten, so in denselben funden worden, in gesundheit aufgericht." (See R. Julius Hartmann, *op. cit.*, pp. 25 and 181, notes 56 ff. In note 57, Hartmann mentions an article in vol. 4 of the "Abhandlungen der königlichen Societät der Wissenschaften zu Kopenhagen" which is supposed to prove that Paracelsus served as physician in the army of King Christian II of Denmark. The article is mentioned in Ersch-Gruber, *Allgemeine Encyklopädie der Wissenschaften und Künste*, 3. Sect. 11. Theil, 1838, p. 286, but was accessible neither to Hartmann nor to me.)

[18] I refer here to the preface to the first Tractat of book 1 of the Grosse Wundarznei (ed. Sudhoff, X, p. 19 ff.), a book that dates from 1536.

[19] *See* Bittel, *loc. cit.*, p. 37 f. See also George Rosen, Some recent European publications dealing with Paracelsus, *Journal of the History of Medicine*, 1947, vol. 2, pp. 537-548.

seems rooted in Paracelsus' character. The name Paracelsus appears in 1529 in connection with an astrological prognosis on the fate of Europe.[20] Among the speculations about the meaning of the word Paracelsus, that which explains it as a latinization of the family name von Hohenheim is the most likely as far as rational meaning is concerned.[21] But does the rational intent suffice? If the name had been coined merely to fascinate the hearer, it could not have been done better. Through the centuries the name has exerted a peculiar magic. Paracelsus was a magician [22] and there is at the core of the magician's personality an elusiveness which, though not identifiable with willful deceit, yet instinctively avoids precision and lucidity.

From the man we pass to his works, only to meet with great external obstacles to their understanding. The idiom he used adds to the difficulties of an as yet grammatically undeveloped German language which lacked the adequate vocabulary and stylistic suppleness for the scientific content he wished to express. But these external obstacles, which Gundolf [23] has analyzed, are not decisive. When Paracelsus heaps scorn upon the doctors and apothecaries, he expresses himself only too clearly. Where he speaks of the physician's duty, of the dignity of medicine, and of the distress of the sick, he finds words of a poignancy that makes him one of the most moving German authors of the Reformation period. Where the underlying thought is quite clear to us, it reveals itself through the cover of the style. But where the thought is strange we meet with difficulties more serious than the unfamiliar style.

An example may serve us as illustration and guide. It is taken from the first of Paracelsus' "Eleven treatises of the origin, causes, signs, and cures of individual diseases," medical sketches supposedly written about 1520, and it concerns the pathology and treatment of dropsy.[24] We

[20] *See* Paracelsus-Museum Stuttgart, Paracelsus-Dokumentation, Referat-Blätter. A 44: *Para und Paracelsus*, 1943 (Dr. Bittel).

[21] For this as well as other interpretations see Bittel, *ibid.* For the purpose of the present discussion it matters little whether the name Paracelsus was coined by himself or invented by others and subsequently accepted.

[22] I use the word magician to characterize the author of the Astronomia Magna and the prophecies on Europe. Paracelsus' personality has facets which do not impress me as harmoniously united. Franz Strunz, *Theophrastus Paracelsus*, Salzburg-Leipzig, Pustet, 1937, p. 49: ". . . dieses aufreizend Widerspruchsvolle, das im seelischen Knotenpunkt seines Charakters liegt und seiner so schwer deutbaren Persönlichkeit die Farbe gibt. . . ."

[23] Friedrich Gundolf, *Paracelsus*, Berlin, Georg Bondi, 1927.

[24] "Elf Traktat von Ursprung, Ursachen, Zeichen und Kur einzelner Krankheiten," I. Von der Wassersucht; ed. Sudhoff, I, p. 3 ff. I have chiefly used the first version (pp.

have chosen this short essay because of its relative simplicity, and the absence of the Paracelsian neologisms which were already the despair of his contemporaries.

According to Paracelsus, the nature of dropsy is expressed in its German name, Wassersucht; for essentially it is water, or rather a resolutus liquor, that is a fluid generated from the solution of tissues.[25] Paracelsus describes the disease as a gradual swelling of the body from the feet upwards "until the spirit of life is drowned in it, like a man in a flood that overtakes him." The patient has a feeling of pressure in the epigastric region and oppression around the heart, he coughs and is short of breath. "All these things are the disease called 'Wassersucht.' And in the end it reddens the urine, splits open the skin, seeps through and there may be thirst. In some it increases quickly, in others slowly, according to the impression from the heavens; and in the same course they die."[26] The clinical description is brief but masterly; its latter part refers to his explanation of the disease which rests upon three concepts: the power of the heavens, the nature of the earth, and the microcosm.

Paracelsus believes in a correspondence between the macrocosm, the outer world, and the microcosm, i. e. man. The macrocosm consists of the visible heavens with their higher elements of air and fire, and of earth and water, the lower elements. The elements are not the physicochemical principles of the Aristotelian-Galenic tradition; they are the sources from which and in which things are generated and grow: plants from earth, minerals from water. The elements are the mothers that bring forth the manifold species of things. And the heavens and lower elements exist in man too, but invisibly. Nevertheless, the same processes that can be observed in the macrocosm also go on in the microcosm and account for many diseases. Since man's inner nature is invisible, the physician has to rely on the observation of the external world and then find the correspondence in the inner. This finding of the correspondence Paracelsus called anatomy, in contrast to the ordinary anatomy of which he did not think very highly.

3-9) for the following analysis. I wish to emphasize that in selecting this essay I have chosen an example of *one* type of Paracelsian pathology. I am aware that Paracelsus also knows of other types of pathological interpretation, e. g. the alchemistic, which, however, is hardly less elusive.

[25] This interpretation is suggested by the first paragraph of the second version (p. 10) where Paracelsus lays great stress on the difference between real water and dropsical fluid.

[26] Ed. Sudhoff, I, p. 3.

Of the microcosm you have here to know that it is constituted of the four elements and that it is these elements, but invisibly so. For formed as it is in the image of Him who created things, it has yet remained a creature. Therefore it is in part earth and must have the heavens, must have the air, must have fire etc. just like our Earth, to be understood internally just as the Earth is understood externally. This constitution entails destruction from which diseases grow, if measure and temperance do not prevail.[27]

Now the life of the visible earth depends on the heavens and their impressions, rain and dew. Without the latter, everything on earth will die. But if the earth receives them beyond measure, death will follow too. "As the rain corrupts the earth, makes it too moist, drowns it, interrupts its functions, if the heavens in their impressions cause a downpour beyond temperance and measure, so it also covers man in his earth and pours down on him; this is the dropsy with which this chapter deals." [28]

This interpretation of the disease leads to its prognosis and treatment. The prognosis again contains flashes of lucid clinical description:

If the patients cough continuously and lose their color and the moon rules their lack of breath, for it is from her that the rain and impression of this disease go forth, and if thereupon there is a breaking open, spontaneous seepage, and the mouth and eyes turn yellowish, the nose becomes sharp, the fingers become thin and form wrinkles, the urine decreases and thickens, nature has quite abandoned this patient and there is little hope of bringing her back; but without these signs there is good hope.[29]

The treatment, just as the pathology, has to rest upon the philosophy of the earth, the astronomy of the heavens, and on "physica which teaches you to know the microcosm, what it is and what you have under your hands." [30] The treatment is alchemistic, that is it prefers chemically prepared remedies whose essential nature is to counteract the invisible microcosmic forces. A large accumulation of water has first to be removed by "mercurial essences" (probably mercurial oxide); [31] then sulphur and a metallic "crocus," i. e. oxide, have to be administered.[32] The sulphur is supposed to act like a sun dispelling the rain in the microcosm, while the metallic crocus will dry the body of the patient.

In analyzing this example we have to distinguish between the scientific

[27] *Ibid.*, p. 5. [28] *Ibid.*, p. 4. [29] *Ibid.*, p. 7. [30] *Ibid.*, p. 6.

[31] *See* the second version, p. 17. This seems one of the earliest diuretic uses of mercurial compounds.

[32] For the interpretation of some of Paracelsus' chemical terms see the "Verzeichnis alchemistischer Ausdrücke" in Ernst Darmstaedter, *Die Alchemie des Geber*, Berlin, Springer, 1922, p. 185 ff.

philosophy and the scientific method. Interconnected as the two are, they are yet not identical. Various attempts have been made to outline the scientific philosophy of Paracelsus; the task has proved very difficult and there is no general agreement. We are here not concerned with the difficulties of Paracelsian thought, and it may suffice to give a few examples of the manner in which reconstructions of his philosophy have been attempted. We know that the macrocosm-microcosm parallelism had been popular since antiquity.[33] We also know that Paracelsus, a firm believer in the Bible, was deeply influenced by the accounts that God " formed man of the dust of the ground, and breathed into his nostrils the breath of life " (Genesis 2, 7) and yet " created man in His own image, in the image of God . . ." (*ibid.*, 1, 27). Because of these common origins there is thus for Paracelsus a correspondence between the outer world and man on the one hand, and between man and God on the other.[34] We also know that the heavens, to Paracelsus, represent not only the conditions of climate and weather, but also the conditions of time and change, so that the varying combinations of stars and planets mark the moments for cosmic and human events.[35] Thus the world can be conceived as becoming older and exhibiting new diseases just as man's diseases change with the periods of his life. Again, a study of the works of Paracelsus teaches us that he believed all bodies to be composed of the three chemical principles of sulphur, salt, and mercury.[36] And since sulphur constituted the combustible principle, it begins to appear logical that it should be prescribed to act as a microcosmic sun that would dispel the invisible rain causing dropsy.

In this manner it seems at least possible to piece together the groundwork of Paracelsus' scientific philosophy.[37] And if Paracelsus were but

[33] Adolf Meyer, *Wesen und Geschichte der Theorie vom Mikro- und Makrokosmos*, Bern, 1900; George Perrigo Conger, *Theories of macrocosms and microcosms in the history of philosophy*, New York, 1922.

[34] Bodo Sartorius Freiherr von Waltershausen, *Paracelsus am Eingang der deutschen Bildungsgeschichte*, Leipzig, Meiner, 1936, p. 187.

[35] J. D. Achelis, Zur Grundstruktur der paracelsischen Naturwissenschaft, *Kyklos*, 1, 1928, p. 47.

[36] This chemical theory is one of the best known aspects of Paracelsus' doctrines and is mentioned in all histories of chemistry. On the other hand, the extreme difficulty of exactly interpreting Paracelsus' chemical procedures is indicated by Ernst Darmstaedter, *Arznei und Alchemie: Paracelsus-Studien*, Leipzig, Barth, 1931 (Studien zur Geschichte der Medizin, 20).

[37] Our conviction of man's essential unity seems to stimulate us to the attempt at systematizing the thoughts and acts of historical personalities. In the case of Paracelsus, such a procedure seems unusually doubtful, especially if it relies on gathering passages

a philosopher, this task, difficult as it is, would suffice to make his works understandable, just as the works of other Renaissance philosophers. However, Paracelsus was a physician and a scientist, i. e. an investigator, and the method of his investigation is not revealed by a mere description of his metaphysical schemes. Returning to our example, we may, for instance, ask why Paracelsus had to think of dropsy as the result of an invisible rain? It seems to me that there is no answer to this question. With equal right we might imagine an analogy of flooding rivers swelled by the snow which a premature sun had caused to melt. Or, to give another example, what justification has Paracelsus in interpreting an epileptic attack as a thunderstorm which strikes suddenly but passes soon, leaving the country to recover? [38] The picture may have something compelling, but it remains a picture. There is no necessity for its choice. In other words, we may be able to describe and apprehend the fixed results of Paracelsus' thought; but its movements seem to lack necessity; it is here that Paracelsus eludes us. And unfortunately it is also here that we are relatively little helped by modern scholarship. A glimpse at the bibliography published by Sudhoff [39] in the *Acta Paracelsica* and continued by Betschart [40] in the *Nova Acta Paracelsica* shows that among the books and articles which have appeared since 1900 those dealing with the life of Paracelsus, his philosophical, scientific, and general medical significance far outweigh the studies devoted to his investigation of definite diseases.

It now remains to characterize this elusiveness more sharply and to ask whether and how Paracelsus can justify it. In his macrocosmic analogies, Paracelsus presents us with pictures which he expects us to see just as he sees them. Paralleling art and science, Benesch has spoken of "Paracelsus' intuitive, artistic approach toward nature" and, together with others, has referred to his "interpretation of nature." [41] I too

from various of his writings. One could quite easily compose a list of conflicting statements. Here as so often, certain basic ideas recur, whereas others change or even contradict one another. In Paracelsus, the ratio of the latter to the former impresses me as being great. H. Kayser, Das Formendenken des Paracelsus, *Nova Acta Paracelsica*, 1, 1944, pp. 103-108, has stressed the difficulties of systematizing Paracelsus' doctrines, and has pointed to the latter's "Formendenken," and especially the "Bildbegriffe" (image concepts) as one of the main roots of these difficulties.

[38] O. Temkin, *The falling sickness*, Baltimore, Johns Hopkins Press, 1945, p. 162 f.

[39] Karl Sudhoff, Nachweise zur Paracelsus-Literatur. Beilage zu *Acta Paracelsica*, 1-5, 1930-32.

[40] P. Ildefons Betschart, Paracelsus-Bibliographie, *Nova Acta Paracelsica*, 1, 1944, pp. 182-192.

[41] Otto Benesch, *The art of the Renaissance in northern Europe*, Harvard University Press, 1947, pp. 50 and 51.

think that Paracelsus' scientific method can rightly be called intuitive and interpretative. Negatively this is evidenced by his dislike of discursive proof, scholastic or otherwise. Paracelsus condemns a science based on human reasoning as sheer phantasy. This is more than an attack on the scholastic belief in authority; it is an attack on the rationality of the world. On the positive side, his intuitive method is evidenced by his predilection for examples. It has long been remarked that Paracelsus has a liking for analogies. This in itself would be of little importance since analogy had been a scientific tool from the days of antiquity. With Paracelsus, however, the analogy almost takes the place of the parable in the New Testament. To make his reader see the truth of his interpretation, Paracelsus has no other means but to lead him as near as possible through examples. Hence the style of Paracelsus is marked by a series of statements connected by analogies or by open or hidden biblical references. It fits none of the great scientific methods, be they scholastic, mathematical, classificatory, purely descriptive, or even experimental in the modern sense. And these pictures, these visions are offered as interpretations of what is otherwise hidden and obscure in its causes.[42]

This procedure finds its justification in the *Labyrinthus medicorum errantium*, one of the Carinthian writings of 1538, the other two being his *Seven Defensiones* and the *Book on the Tartaric Diseases*. The physicians who rely on the written books err and find themselves in a labyrinth. "Nevertheless," Paracelsus says, "a disciple cannot exist without a master; the disciple must learn from the master. And I wondered again and again where the master might be who would teach, since the scribblers cannot be deemed masters. This made me think if there were no book on earth, no physician at all, how would one then have to learn? And I realized that medicine can very well be learned without a human master. How, and in what manner, I have here put together, the very books that are the truly basic ones for the invention of all arts and theory."[43] These truly basic books are the heavens, the elements, the anatomy of the macrocosm and microcosm, alchemy, etc., many of which we have already met as fundaments of the Paracelsian philosophy of science. They are the books whose study Paracelsus recommends "in the light of nature."

Much has been written about the meaning Paracelsus gives to the

[42] *See* Kayser, *op. cit.* and Hans Fischer, Die kosmologische Anthropologie des Paracelsus als Grundlage seiner Medizin, *Verhandlungen der naturforschenden Gesellschaft in Basel*, 52, 1940-41, pp. 267-317; see especially p. 285.

[43] Labyrinthus medicorum errantium, ed. Sudhoff, XI, p. 103.

"lumen naturale." [44] It will suffice to point out that he believes in its illuminating function. The natural light helps us to see things as they really are in nature, it reveals what otherwise is invisible.[45] We can now understand why Paracelsus speaks in pictures and how his intuitive method justified itself. At the same time we know that we cannot follow him, at least not everywhere. Only when he describes phenomena which we can see with our own eyes or test by our own experience do we share his intuition. Thus we admire the passages in which he reveals himself as a master of clinical observation. The Paracelsus who travels from land to land, who turns the leaves of the codex naturae with his feet [46] in order to observe new diseases, is the Paracelsus we understand. But when he turns to the study of the other books, his visions become strange and he eludes us. When he describes the course of dropsy as it may develop in severe cardiac insufficiency, or recommends mercurial drugs, he and we see in the same light. But when he declares dropsy a rain, the light of nature shines for him while we remain in darkness.

Modern science distrusts intuition. Paracelsus was not a modern scientist,[47] but he too set conditions for its use. The investigation of nature will yield certainty if undertaken in confidence in God. He is the author of the book of Nature, He is the first of the books that Paracelsus recommends to the student. "Thus every perfect gift comes from God who bids us ask, seek, and knock and who says that what we ask in His name shall be given unto us. Hence there follows that we are not given stones or serpents for bread, but something better. Now every student of nature should know that he has to get to know nature in this manner." [48]

To the written books of authority with their trust in reason, Paracelsus has thus opposed a method that relies on God and the experience of nature. The scholastic books stand condemned because their truth cannot be proved; the scholastic dispute leads in a circle from the book back to the book.[49] Proof has to be found outside of this circle, viz. in works, the

[44] On this concept see among others Fritz Medicus, Paracelsus in der philosophischen Bewegung seiner und unserer Zeit, *Nova Acta Paracelsica*, I, 1944, pp. 45-68; Hans Fisher, *op. cit.*; and especially von Waltershausen, *op. cit.*

[45] Von Waltershausen, *op. cit.*, p. 106.

[46] Paracelsus, Seven Defensiones, translated by C. Lilian Temkin (*Four Treatises of Theophrastus von Hohenheim called Paracelsus*, ed. Henry E. Sigerist, Baltimore, Johns Hopkins Press, 1941, p. 29): "Scripture is explored through its letters; but nature from land to land. Every land is a leaf. Such is the *Codex Naturae*; thus must her leaves be turned."

[47] H. Fischer, *op. cit.*, p. 285, rightly contrasts Paracelsus' intuitive knowledge gained in the light of nature with modern physical science. *See* also Kayser, *op. cit.*

[48] Labyrinthus medicorum errantium, ed. Sudhoff, XI, p. 173.

[49] *Ibid.*, p. 177: "es ist etwas mer dan spöttig, das die erzt so gar nit wöllen in die

healing of the sick, and by its inefficiency, the medicine of the Galenists reveals itself as false.[50] Obviously, however, the same demand for practical proof can be made of Paracelsus. His intuitions would be worthless if his method did not lead to better results. Hence he must claim to be the better physician and to have cured where his adversaries failed. The question as to whether Paracelsus really was a successful practitioner thus shows itself as a very important one. We may not be able to answer it, but we can understand why Paracelsus must boast and why he cannot permit any doubt of his ability to cure. For this alone yields the objective justification of his interpretation of nature. The elusive character of the man and the elusive nature of his thought, therefore, are but two aspects of the same thing.

At this point we may begin to wonder just how seriously Paracelsus should be taken when he refers to the heavens, the elements, etc. as books. Our first reaction is to take this manner of speech as a mere simile, used to contrast nature to the "paper books" as Paracelsus calls them.[51] If this is the case, Paracelsus appears peculiarly persistent in his use of the simile. He refers to the world as a library,[52] countries are leaves of the book of nature,[53] stars are compared to words and their combinations to meaningful sentences.[54] Somewhere Paracelsus even maintains that every profession is based on its own book: theology on the Bible, jurisprudence on the corpus juris. It is, therefore, at least worth while trying to take his simile seriously,[55] especially after the lesson Professor Singleton[56] has taught us regarding Dante's *Vita nuova*.

rechten bücher der erznei, sondern verzeren ir zeit unnüzlich in den erdichten büchern, dero buchstaben tot ist und im sentenz kein leben, *als sie dan auch durch ir werk bezeugen* und betrachten nicht, so einer spreche, das buch der erznei ist falsch, das sie es nicht könten probiren das gerecht were als alein mit demselbigen buchstaben. so ein buch probirt sol werden, so muss probirt werden aus dem aus dem es ist. das euangelium aus Christo, aus im ist es, das natürlich buch aus der natur, aus der natur ist es." (italics mine).

[50] *See* the italicized passage above. *Ibid.*, p. 175: ". . . und on die bücher des rechten grunts seints alles tote buchstaben, das ist, sie bringen die kranken mer zum tot dan zum leben."

[51] *Ibid.*, p. 174: "die bücher des papirs."

[52] Das Buch von den tartarischen Krankheiten, ed. Sudhoff, XI, p. 92.

[53] *See* above, note 46; also ed. Sudhoff, XI, p. 92.

[54] Labyrinthus, ed. Sudhoff, XI, p. 175 f. Since the "book"—similes abound in the Carinthian writings which are all of the same period, I have used them as main references.

[55] A. Koyré, Paracelse, *Revue d'Histoire et le Philosophie religieuses*, 1933, pp. 46-75, and 145-163; see p. 58.

[56] Charles S. Singleton, *An essay on the Vita Nuova*. Harvard University Press, 1949. This work contains instructive material on "the book of nature" and similar expressions; see especially pp. 34 ff. and 131 ff.

We were able to confirm the opinion that Paracelsus interpreted nature; and we know that Paracelsus refers to nature as a book written by God. "And nobody may make a book or a text: it is nature who makes the text, the physician makes but the gloss." [57] From this point of view, Paracelsus' own works are but glosses to the book of nature. Now the task of the glossator is to facilitate the understanding of the text; and if we are right, then the purpose of Paracelsus as an author is to facilitate the understanding of nature, notably for those who are not able to read the text by themselves. Such a view seems to give the answer to a difficulty frequently encountered in Paracelsus' works. Repeatedly he breaks off a discussion with the suggestion that the reader find the rest by himself. In one place, for instance, where he refers the reader to his own clinical experience, he says: "Thus it is necessary that a physician have great experience, not only of what is in the book; rather, the sick should be his book; they will not fail him; in them he will not be deceived. But the physician who is satisfied with the letter—the letter is dead and he too is dead; these two kill the patient also." [58]

Strictly speaking, he who searches in the light of nature does not need any books, but will gather his own experience. It has rightly been observed that Paracelsus' idea of experience is an individualistic one,[59] just as is Luther's idea of faith based on the interpretation of God's word. Nevertheless, Paracelsus cannot refrain from writing paper books and putting before the reader what he believes to be the right interpretation of nature,[60] just as Luther soon led his followers to a new form of orthodoxy. But at any moment Paracelsus will remember his role as a mere commentator and refer the reader back to his own search. It is just at such moments that we are most acutely aware of our inability to interpret nature. For our physical and biological science has followed a different direction.[61] And it is not by chance that Paracelsus appears most modern

[57] Labyrinthus, ed. Sudhoff, XI, p. 182. Paracelsus here alludes to the "glosses" added to medieval texts; the modern reader may take the term in the approximate sense of a commentary. Cf. Singleton, *op. cit.* and Beryl Smalley, *The study of the Bible in the middle ages*, Oxford, Clarendon Press, 1941, p. 35. For medical glosses see Max Neuburger, *Geschichte der Medizin*, vol. 2, Stuttgart, Enke, 1911, p. 375.

[58] Tartarische Krankheiten, ed. Sudhoff, XI, p. 85.

[59] Wilhelm Matthiessen, *Die Form des religiösen Verhaltens bei Theophrast von Hohenheim, gen. Paracelsus.* Diss. Bonn. Düsseldorf, 1917, p. 5 ff.

[60] Paracelsus does not altogether exclude the possibility of learning from a book, provided that it be understood in the light of nature, just as the Gospel is a spur to seek the eternal life in its author (Labyrinthus, ed. Sudhoff, p. 200 f.) See also below, note 65.

[61] Since a "meaning" only can be interpreted, an interpretation of nature becomes impossible as soon as nature is no longer believed to be meaningful.

to us where we too have recourse to an interpretative method, viz. in analytical psychology and psychiatry.[62]

A comparison with Galilei's reference to the book of nature is instructive. There are obvious parallels: Galilei speaks of the true book of philosophy as Paracelsus speaks of the true book of medicine. To the books written by the phantasy of men, both oppose the book of nature. But here a decisive difference becomes visible. Galilei claims that the book of nature is not written in the ordinary alphabet, but in "triangles, squares, circles, spheres, cones, pyramids, and other mathematical figures." Therefore "this book can only be read by means of mathematics." [63] But since mathematics can be learned, this means that man can acquire a method that will make the book of nature readable. Such a method is lacking in Paracelsus. There are indications that chemistry could have supplied it. In his work on the tartaric diseases, Paracelsus hints that an examination of the urine of the patients as well as of their food might reveal the substances whose ingestion causes these metabolic diseases.[64] But chemically such an analysis was not possible at the time. It is one of the many glimpses Paracelsus had of a science approaching ours,[65] of a way out of the interpretation of nature. As it was, Paracelsus attempted to read a book written in an unknown language, and he had to rely on the technique of the philologist who tries to decipher a strange inscription. The assumed meaning of some letters and words must support the reading of the rest. Thus in our example of dropsy we questioned the necessity of interpreting the disease as an invisible rain. However, this interpretation is partly supported by the immediately following interpretation of consumption as a lack of rain, as a drought.[66] Since the same vision explains two diseases, Paracelsus could consider it as confirmed by nature.

The main consequence of the lack of a rational or otherwise objective method was a preoccupation with language and terminology. Paracelsus

[62] It is, therefore, understandable that Paracelsus has received the attention of psychiatrists. *See* C. G. Jung, *Paracelsica*, Zürich, Rascher Verlag, 1942; I. Galdston, The psychiatry of Paracelsus, *Bull. Hist. Med.*, 24, 1950, pp. 205-218.

[63] Cf. Wilhelm Dilthey, *Gesammelte Schriften*, vol. 2, Leipzig-Berlin, Teubner, 1921, p. 259.

[64] Ed. Sudhoff, XI, p. 94.

[65] In the same work, p. 27, Paracelsus suggests that a written book of real value could be composed if all physicians described the species of tartaric diseases prevalent in their countries. He compares such a book to a map from which everybody can learn even if he has not travelled himself. This passage strikes me as approaching the modern concept of inductive science. At the same time it is an example of a positive evaluation of books (see above, note 60).

[66] Ed. Sudhoff, I, pp. 9 and 24.

did not care for the humanist's learned interests. " As to the names which dropsy has, be it in Latin, Greek, Arabic or Chaldaic, never mind their etymology, for here the languages play with one another and make sport like cats with mice; such study is useless." [67] But the glossator of the book of nature must be sure that his words denote things as they really are. Since the text of the book cannot be changed, all efforts have to concentrate upon the terminology of the gloss. Here the glossator and the magician Paracelsus meet and so are born the yliaster and cagaster and other monsters of a terminology which, as Achelis has shown, is rooted in the very structure of Paracelsian science.[68] That the preoccupation is not merely due to a lack of preexisting convenient terms, but to a concern with proper medical and scientific language, can be exemplified by the name " tartaric diseases " which Paracelsus coined. The old names, stone and gravel, are inadequate because the concretions found in the bladder, kidneys, and elsewhere are not real stones. The old names are metaphors. " And this I declare, because it is a lack of skill to use metaphora in medicine and nothing but an error to give names metaphorically." [69] He chooses the name tartaric because of the identity of the matter formed in these diseases with the concretions found in wine casks.[70] Again we have an example of the possibility of establishing an objective science by proving the real identity of the two. As it is, the identity largely rests on analogy and does not even give the only reason for the new name. " Moreover, mark my words, the name I give to this disease is tartara, that is aegritudo tartari or tartareus morbus, taken from tartaro which is called tartarum by its inborn name; tartarum because it yields an oil, a water, a tincture, a salt which inflames and burns the sick like a hellish fire, for tartarum is the hell." [71] Since Paracelsus offers this etymology instead of the alleged metaphors, we may assume that to him the connection between the substance that causes hellish pain and the name of the disease that means hell is a real one. In short, the magic glossator is not satisfied with referring to a thing, but wishes to express the thing itself.

But our main concern is not with the magician Paracelsus; we tried to explain the elusive character of the physician, as far as a separation is possible. The aim of this paper is to facilitate the reading of Paracelsus'

[67] *Ibid.*, p. 3.

[68] J. D. Achelis, Zur Terminologie des Labyrinthus Medicorum, *Acta Paracelsica*, 1930, pp. 33-39. On the magic element of Paracelsus' terminology, see Jung, *op. cit.*, p. 60 f.

[69] Tartarische Krankheiten, ed. Sudhoff, XI, p. 20.

[70] *Ibid.*, pp. 19-23.

[71] *Ibid.*, p. 21.

medical works. Paracelsus cannot be approached like a modern doctor who is sure of his training and his usefulness. Nor can his works be read like modern medical publications. There are passages that appeal to us directly; we mentioned a few, we might have mentioned many more. But there are provinces where Paracelsus remains elusive; not because of a complicated philosophy, but because of an approach that may yield personal conviction, yet does not allow objective certainty. Paracelsus' enmity towards medieval scholasticism should not mislead us into seeing in him a modern scientist. If we know what not to expect, we may be in a better position to understand. The famous Lichtenberg once asked: "If a head and a book clash and the sound is hollow, is that sound always in the book?" [72] In one form or another, this question has again and again been raised by the readers of Paracelsus. Who should decide whether the man was a genius, though hard to understand, or a charlatan, and not worth while reading? In our opinion the question is wrongly put. A man can be intrinsically elusive and yet worth while reading.

[72] I am indebted to Professor Ludwig Edelstein for this aphorism; see G. Chr. Lichtenberg, Aphorismen (E 103) *Deutsche Literaturdenkmale des 18. und 19. Jahrhunderts*, No. 136, Berlin, 1906, p. 23.

THE MEDICAL PROFESSION AND PUBLIC HEALTH IN COLONIAL BOSTON *

JOHN B. BLAKE

When the Puritans settled Boston in 1630, they brought with them certain epidemiological ideas. Tradition and experience taught them that plague, syphilis, and smallpox were contagious diseases. They were acquainted with the vigorous sanitary policy of Tudor England. It is not surprising, therefore, that soon after their arrival they began to issue elementary sanitary orders and on occasion quarantined vessels from places where epidemics raged.[1] During the seventeenth century most of their public health activity was designed to meet certain specific emergencies. By the end of the century, however, repeated experience had demonstrated clearly that such an informal system was inadequate to prevent recurrent epidemics of smallpox and other infectious diseases. During the first two decades of the eighteenth century, therefore, the legislature of Massachusetts together with the Selectmen and town of Boston laid the foundations of a public health program which was to last in its essentials for nearly a hundred years.

This included both sanitation and protection against contagious diseases. Water supply, for example, was still a private matter, but under the authority of a statute passed in 1709 the Selectmen regulated the construction of private sewers.[2] Some citizens made a serious attempt to have the town adopt an effective method of street cleaning, but they met with only a short-lived success.[3] A fairly effective system was set up for regulating noxious trades, considered a prime health hazard. Butchers especially were the target of legislation and town by-laws, since it was believed that slaughter houses "by ill stenches tend to breed in-

* Read at the meeting of the Johns Hopkins Medical History Club, January 7, 1952.

[1] C.-E. A. Winslow, *The Conquest of Epidemic Disease* (Princeton, 1943), 88-144; Sanford V. Larkey, "Public Health in Tudor England," *American Journal of Public Health*, XXIV (1934), 1099-1102; J. H. Thomas, *Town Government in the Sixteenth Century* (London, 1933), 48-64, 135-171; Boston Record Commissioners, *Report* (Boston, 1876-1898), II, 1-2, 109-111, 131, 159; Governor and Company of the Massachusetts Bay in New England, *Records* (Nathaniel B. Shurtleff, ed., Boston, 1853-54), II, 237, 280; IV, part 2, 280, 345.

[2] 1709-10, ch. 5, Massachusetts General Court, *The Acts and Resolves, Public and Private, of the Province of the Massachusetts Bay* (Boston, 1869-1922), I, 643.

[3] Boston Record Commissioners, *Report*, VIII, 95, 97, 100, 105-106, 141.

fection." Thus in accordance with an act of 1692 the Selectmen and three Justices of the Peace assigned certain places where butchers, distillers, chandlers, and curriers could carry on their trades.[4]

The greatest achievement of the first two decades of the eighteenth century, however, was the development of a system for controlling recognized contagious diseases. In 1701 the General Court passed one of the first general quarantine acts in the colonies, requiring Justices of the Peace to prevent anyone from leaving a ship aboard which there had been a case of "plague, smallpox, pestilential or malignant fever" during the voyage, or which came from a port where any such sicknesses prevailed. The law also authorized the Selectmen of any town to remove a person sick with a contagious disease to some isolated house, and, if necessary, to impress not only the house, but also nurses and any needed supplies.[5] At least as early as 1710 Boston had a "Lazar house" for isolating smallpox cases,[6] and in 1717 this was replaced by a new "hospital" on Spectacle Island out in the harbor. A supplementary quarantine act improved greatly the administrative provisions, provided heavy penalties for evasion, and placed the management of the hospital under the Boston Selectmen.[7] With the addition of a law passed in 1732 requiring heads of households to report to the Selectmen cases of smallpox within their families,[8] the basic public health law of pre-Revolutionary Massachusetts was complete. Subsequent legislation did much to improve the administrative system, but the general policies remained unchanged. This program did not entirely eliminate smallpox epidemics, but compared to England's, for example, it was remarkably successful.

The etiological theories behind this legislation were fairly simple and it was essentially a product of the lay mind. Briefly they were that the way to avoid unusual and deadly epidemics was to keep away from the sick, and that the way to prevent other fevers was to eliminate nuisances. These ideas, descendants of medieval traditions, were the same as those on which the occasional activity of the seventeenth century had been

[4] Massachusetts General Court, *The Colonial Laws of Massachusetts. Reprinted from the Edition of 1672, with the Supplements through 1686* (William H. Whitmore, ed., Boston, 1890), 312-313; 1692-93, ch. 23, Mass. *Acts and Resolves*, I, 59-60; 1710-11, ch. 8, *ibid.*, I, 656-657; Boston Record Commissioners, *Report*, VII, 213-216.

[5] 1701-02, ch. 9, Mass. *Acts and Resolves*, I, 469-470. An earlier quarantine act (1699-1700, ch. 7) passed in 1699 was disallowed by the Privy Council. *Ibid.*, I, 376-377, 417.

[6] Boston Record Commissioners, *Report*, XI, 105, 122; Samuel Sewall, *Diary*, II (Massachusetts Historical Society, *Collections*, ser. v, vol. VI, 1879), 353.

[7] 1717-18, ch. 14, Mass. *Acts and Resolves*, II, 91-92.

[8] 1731-32, ch. 13, *ibid.*, II, 621-622.

grounded. It was not new medical theories which fostered this legislation, but the increasing complexity of the Massachusetts civilization. There was no provision for using the special ability of physicians in carrying out the laws. Administration depended entirely upon such lay governmental officials as the Selectmen and Justices of the Peace.

European epidemiological theory, however, had not been stagnant during the seventeenth century. Of the various writers from whom the physicians of the colonies derived their ideas, one of the most influential was Thomas Sydenham, the great English clinician. Claiming to eschew speculation and theorizing, he revived Hippocratic methods of observation and experience, describing diseases as he saw them. His contributions were many and valuable, but his epidemiological theory, in the opinion of some later students, was in some ways worse than useless.[9] Believing that maladies "arise partly from the particles of the atmosphere," he thought that the changing epidemics of succeeding years must be due to varying constitutions of the atmosphere. Since he was unable to find any correlation between the epidemics of different years and "manifest atmospheric changes," or, as we would call them, weather conditions, he concluded that they were "engendered through occult and inexplicable changes of the atmosphere." The constitutions, he continued, "depend upon certain hidden and inexplicable changes within the bowels of the earth. By the effluvia from these the atmosphere becomes contaminate, and the bodies of men are predisposed and determined, as the case may be, to this or that complaint." [10] Although he admitted to "grave suspicions that the mere atmospheric constitution . . . is by no means sufficient, in and of itself, to originate plague," and although he noted that contagion "occasionally gives origin to" epidemic fevers,[11] in his thinking the epidemic constitution played an overriding role. It was a handy concept, for it provided a comprehensive answer to any etiological problem or epidemic phenomenon, but it could not be studied or observed, and to affect it was beyond the power of man.

Sydenham's theory did not pass without challenge. John Huxham, for example, followed his example of searching for the key to epidemic phenomena by relating the roll of maladies during a series of years. Although he believed that plague and smallpox were contagious, he too

[9] Winslow, *Conquest of Epidemic Disease*, 161-175; Major Greenwood, *Epidemics and Crowd-Diseases* (New York, 1935), 35-39.

[10] Thomas Sydenham, *Works* (R. G. Latham, trans., London, 1848-50), I, 29-35.

[11] *Ibid.*, I, 101, 240.

emphasized in his *Observations on the Air and Epidemic Diseases* the importance of the condition of the air, because, he wrote, "the Depraved Constitutions of the Atmosphere are the Causes of almost all epidemic Distempers, nay even the Increase and Duration of such as are properly stiled Contagious, greatly depend on those Constitutions."[11a] He tried, however, to remove it from the realm of the occult by ascribing to heat and cold, moisture and dryness, atmospheric pressure and wind direction the basic causal role in the diseases he described.[12] Richard Mead, on the other hand, in his *Short Discourse Concerning Pestilential Contagion,* emphasized the importance of quarantine and isolation to prevent and control plague.[13] Dr. William Douglass of Boston pointed out that the smallpox there in 1721 affected only two or three adjacent towns, "which demonstrates that no constitution of air &c can produce the small Pox without some real communication of Infection from a small Pox Illness."[14]

Nevertheless the idea of the epidemic constitution, including such local influences as season and climate over which men had no control, played an important role in etiological thinking, and therefore in public health. Consider the theory expressed by Douglass on the various malignant acute diseases: "Of those some are *Endemial,* peculiar to Countries, Climates, Seasons, and Constitutions of the Air; but *not communicable* by Infection from Man to Man: Most Countries have at times *Fevers* of this kind," among which he included the "autumnal" ones of New England. Some, he continued, "altho' originally *Endemial* or the produce of Climates Seasons *&c.* may by *Infection* be spread at home, and in some Constitutions of the Air, may be conveyed and disseminated in Countries abroad where they are not natives but *Exoticks,* and therefore cannot thrive so well there as in their native Soil." The outstanding example of this type was plague, native to the Levant and Egypt, sometimes brought to Europe. One disease, Douglass thought, would not fit into these categories: "The *Small Pox* is a Disease of a more *singular nature,* it

[11a] John Huxham, *Observations on the Air and Epidemic Diseases from the Year MDCCXXVIII. to MDCCXXXVII. Inclusive* ([John Corham Huxham], trans., London, 1759), i-ii.

[12] *Ibid.,* i-xxiv and *passim;* John Huxham, *Observations on the Air, and Epidemic Diseases, from the Beginning of the Year 1738, to the End of the Year 1748* (J. C. Huxham, trans., London, 1767), *passim.*

[13] Winslow, *Conquest of Epidemic Disease,* 176-192.

[14] Douglass to Cadwallader Colden, May 1, 1722, in Cadwallader Colden, *Letters and Papers,* I (New York Historical, Society, *Collections,* L, 1917), 141.

is of a very uncertain Original, we know of no Country where it is a Native or Endemial, that is, where it is the produce of Seasons, Winds, *&c.* . . . . It owes the continuation of its being to a *variolous leaven* communicable in all Countries and Seasons, but some Constitutions of Years favour its propagation and mortality more or less. . . ." [15] Thus for defense against plague and smallpox, Douglass would have recommended measures derived from the theory that these two diseases spread from person to person. But for other acute malignant fevers caused by climate, season, or constitution of the air, no such activity would be of any avail.

Douglass was not of course the only Boston physician influenced by the ideas of Sydenham, Mead, and Huxham. During the seventeenth century, many of the ministers of Massachusetts doubled as physicians, and although Edward Johnson declared as early as 1650 that " some help hath been had from hence [Harvard] in the study of Physick," [16] Boston's doctors received their training at best by apprenticeship. With the meagre facilities available, and the lack of stimulation which comes from wide association with other members of the profession, the quality of the ordinary colonial practitioner probably sank below even that of the English.[17]

By the early eighteenth century, however, there was a growing change in the character of the profession. Though present, the clergyman-doctor was no longer a significant factor in the larger communities. As in commerce and government, so in medicine there was an increasingly close touch with England. As the colonies developed economically, they became better able to support professional men, especially in the more populous centers, and many European-trained men immigrated. Among these was William Douglass, who was born in Scotland, studied medicine at Utrecht and Leyden, and settled in Boston in 1718, the only man there with an M. D. degree, where he found " I can live handsomely by the incomes of my Practice, and save some small matter." [18] Another was James

[15] William Douglass, *A Practical Essay Concerning the Small Pox* (Boston, 1730), 1-2.

[16] Edward Johnson, *Wonder-Working Providence, 1628-1651* (J. F. Jameson, ed., *Original Narratives of Early American History*, New York, 1910), 202.

[17] Genevieve Miller, " Medical Apprenticeship in the American Colonies," *Ciba Symposia*, VIII (1946-47), 504-510; Francis R. Packard, *History of Medicine in the United States* (New York, 1931), I, 8-32; Oliver Wendell Holmes, " Receipts to Cure Various Disorders," Massachusetts Historical Society, *Proceedings*, V (1860-62), 379-399; F. H. Brown, " The Practice of Medicine in New England before 1700," Bostonian Society, *Publications*, VIII (1911), 94-120.

[18] Douglass to Colden, Feb. 20, 1720/21, in Colden, *Letters and Papers*, I (New York

Halkerston, who came to Boston in 1715, a Scotsman educated at the University of St. Andrews and for some years a Master Surgeon in the Royal Navy.[19]

An increasing number of well-to-do colonists, moreover, were going abroad to finish their medical education. Thomas Bulfinch, perhaps the first of many native Boston doctors to be trained abroad, left for three years' study in London and Paris about the same time that Douglass settled in the Massachusetts capital. Zabdiel Boylston received his training from Dr. John Cutter of Boston, but he sent his son to London, armed with a letter to Sir Hans Sloane. Silvester Gardiner, a native of Rhode Island, studied in London and Paris for some eight years before settling down as a leading practitioner in Boston. James Lloyd, after spending two years in London attending lectures by William Hunter and William Smellie, returned home to become Boston's pioneer obstetrician and the preceptor of many students.[20]

Another source of contact with England was the increasing transfer of the written word. New developments were more quickly relayed to the colony through the Royal Society and other contacts, and several Bostonians were in frequent communication with English doctors and scientists. Douglass, for example, was well acquainted with the latest writings, and in a pamphlet on smallpox he discussed not only Sydenham's contributions to the treatment of the disease, but also cited recent observations by Huxham.[21] Harvard's assortment of medical books as late as 1723 was negligible, but by 1764 it had acquired "A collection of the most approved medical Authors chiefly presented by Mr. James of the island of Jamaica; to which Dr. Mead and other Gentlemen have made very considerable additions: Also anatomical cuts and two compleat skeletons of different sexes." [22]

Historical Society, *Collections*, L, 1917), 114; Howard A. Kelly and Walter L. Burrage, *Dictionary of American Medical Biography* (New York, 1928), 340.

[19] *Boston News-Letter*, June 19, 1721.

[20] James Thacher, *American Medical Biography* (Boston, 1828), 209, 271; Kelly and Burrage, *American Medical Biography*, 134, 450, 751.

[21] Douglass, *Practical Essay Concerning Small Pox*, 9-38.

[22] Samuel E. Morison, *Harvard College in the Seventeenth Century* (Cambridge, 1936), I, 295; *Boston-Gazette and Country Journal*, Jan. 30, 1764. Unfortunately all this was lost in a fire that year. On medical contacts between American and Europe in general, Genevieve Miller, "European Influences in Colonial Medicine," *Ciba Symposia*, VIII (1946-47), 511-521; Michael Kraus, "American and European Medicine in the Eighteenth Century," *Bulletin of the History of Medicine*, VIII (1940), 679-695; Packard, *History of Medicine*, II, 953-986.

Despite the improvements brought by these European contacts, the leading medical men of America, like their English contemporaries, still had plenty of competition. Quacks of all sorts flourished. In 1741 Palmer Goulding, the representative from Worcester in the Massachusetts General Court, presented a memorial,

> Representing he has with considerable Cost attain'd to such Skill and Knowledge in curing the bite of a Rattle Snake, that were he present when a Person was bit, he could so suddenly cure it, that the Person would never be sensible of any Hurt: That the same Medicine if rightly applied has no less Operation on the Body of Men to cure any Inflammation of the Blood, or to prevent or cure any breeding Sore whatsoever: That the said Medicine is also infallible to cure or prevent a Fistula or Pole Evil in Horses: That he is very willing to communicate his Knowledge for the good of Mankind.[23]

Since he had been to great expense in developing this rare elixir, he asked for a grant of unappropriated land for his encouragement—and after much political maneuvering, got it.[24] More common than such achievements were advertisements for proprietary remedies of varying respectability. Samuel Hawkes of Boston, for example, had on sale in 1752 "the celebrated *Fever-Powder*, invented and prepared by the great and learned Physician, Doctor Robert James, of *London*. . . . Two Doses of it, or Three at the most, remove the most obstinate Fever whatever, when they have yielded to nothing else."[25]

The newspapers also contained a miscellany of other medical information. Some were valuable contributions, such as a summary of Richard Mead's *Discourse Concerning Pestilential Contagion*, to which the *News-Letter* devoted several pages in 1721, and accounts of sanitary measures undertaken in England to combat the threat of plague.[26] Others, if less informative, at least emanated from legitimate professional men. Too many, however, related to the latest nostrum discovered by some one and now given to the world. These bits of information seem to have met with widespread approval. As one man wrote to the publisher of the *Boston Gazette*, "I can scarce conceive how you may better serve your Country, than by communicating such Sort of *Remedies* as can easily be had, which have the most efficacious Virtues to prevent or moderate

[23] Massachusetts General Court, House of Representatives, Journals (Boston, 1919-51), XIX, 94.

[24] *Ibid.*, XIX, 94, 124, 132, 135, 152-153, 178-179, 209, 232; Mass. *Acts and Resolves*, XIII, 105-106.

[25] *Boston Evening-Post*, May 18, 1752.

[26] *Boston News-Letter*, July 10, 17, 1721; May 21, 1722.

and cure such Distempers as are most fatal among us." He was particularly grateful for the paper's recent remarks extolling Bishop Berkeley's famous panacea, tar-water.[27]

In contrast to these questionable empirics, medical leaders in the coastal cities were striving to raise their professional standing. One step was to improve local medical education, for although an increasing number of students went to Europe, the majority were still trained at home. As early as 1714 there was a plan for establishing a professorship of physic and anatomy at Harvard, but nothing came of this or other similar proposals until 1782. The regular apprenticeship was supplemented, however, by the chance to attend occasional autopsies and even dissections of executed criminals.[28]

William Douglass also hoped to stimulate and advance the profession by forming a medical society, in 1735. Although number one of the group's "Medical Memoirs" was ready for the press soon after, it apparently was never printed. The Society did, however, publish occasional bits in the newspapers, among them the account of a lithotomy performed by Dr. Silvester Gardiner, demonstrating to the members the improved technique he had learned from William Cheselden in London. When caustic Dr. Alexander Hamilton of Annapolis visited Boston in 1744, he attended meetings of this "Physicall Club" at the Sun Tavern, "where we drank punch, smoaked tobacco, and talked of sundry physicall matters." [29]

There was another development during the eighteenth century which perhaps shows even more than do the improvements in education or the medical society that the physicians had become a recognized and respected professional group, valued for their special knowledge. This was the increasing use of medical advice by the town officials, even though there was no provision in the law for such activity. Among the many unusual features of the heated controversy caused by the introduction of smallpox inoculation in 1721 was the fact that the Selectmen called on the physicians for their professional opinion on a medical matter.

[27] *Boston Gazette, or, Weekly Journal,* Feb. 18, 1752.

[28] Albert Matthews, "Notes on Early Autopsies and Anatomical Lectures," Colonial Society of Massachusetts, *Publications,* XIX (1918), 277-283; Albert Matthews, "Dr. William Lee Perkins (1737-1797)," *ibid.,* XX (1920), 12.

[29] Douglass to Colden, Feb. 17, 1735/36, in Colden, *Letters and Papers,* II (New York Historical Society, *Collections,* LI, 1918), 146-147; *Boston Gazette, or, Weekly Journal,* Nov. 10, 1741; Alexander Hamilton, *Gentleman's Progress: the Itinerarium of Dr. Alexander Hamilton, 1744* (Carl Bridenbaugh, ed., Chapel Hill, 1948), 116.

During the unusual epidemic of "sore-throat distemper" in 1735 and 1736, the physicians and the Selectmen conferred again several times.

These two cases were abnormal, and up till then the Selectmen had evidently considered themselves competent to judge what should be done under ordinary circumstances. In July, 1736, however, when, as had often happened before, an arriving vessel was reported to have had smallpox aboard, the Selectmen requested Dr. William Davis to accompany them when they went aboard to investigate.[30] When the time came to allow the three men from the ship who had been sick to leave the quarantine hospital, they again obtained his opinion. Later in the year they called for his advice on whether another ship might safely be allowed up to the town's docks. In September, 1737, they consulted with several physicians about a ship which had had measles aboard. Two months later, when one of several people who, the Selectmen feared, had been exposed to smallpox began to complain of pain in his head and back, they immediately sent Drs. William Davis, John Cutler, and Thomas Bulfinch to make a diagnosis and report on the patient's condition. By 1738, if not before, *ad hoc* medical attendance was provided at the quarantine hospital. In November, 1738, William Douglass, called in by a sick man, took it upon himself to report the case to the Selectmen, though he was not required by law to do so.[31] Many similar instances occurred in the following years. In the majority of simple quarantine problems the Selectmen continued for a long time to rely on their own knowledge of smallpox without calling in the doctors, but the role of the physician in the administration of public health was never again completely neglected.

Besides this co-operation, the Selectmen and the physicians consulted from time to time on the subject of smallpox inoculation. For the government it was important because it was necessary to regulate it, and even to prohibit it most of the time, in order to keep those with inoculated smallpox from spreading the disease to the susceptible. Only when an epidemic had reached such proportions that it could not be controlled by isolation of the sick was inoculation allowed. It was never used to prevent smallpox epidemics, but only to mitigate their mortality. The actual development and use of the technique, when allowed, was primarily a matter of private medical practice. Not until the epidemic of 1764 did any officials actively promote inoculation, when the Overseers of the Poor

[30] Boston Record Commissioners, *Report*, XIII, 308. So far as I have discovered, this is the first occasion in Boston when medical opinion was called for in a case of this sort.
[31] *Ibid.*, XIII, 315; XV, 16, 70, 83, 141, 144, 147, 162-163.

made arrangements for the physicians to treat those who could not pay as an act of medical charity.[32]

The importance of the role of the medical profession, and their epidemiological theory, in the prevention and control of other diseases besides smallpox is well illustrated by the "sore-thoat distemper" in Boston in 1735 and 1736. This epidemic began in Kingston, New Hampshire, when little Parker Morgan died on May 20, 1735, after a few days illness. During June, thirteen children died; only once, since records had been kept, had there been more deaths in an entire year. The following month nineteen people died, and before the year was over, this small town suffered one hundred and two deaths. Soon after the epidemic appeared in Kingston, it began spreading. Gradually it advanced on other New Hampshire towns, and by late September it had moved south across the Merrimac River in Massachusetts.[33]

In the country districts the people apparently did little or nothing to halt the spread of the disease. The Boston Selectmen, however, took a different attitude. Almost from the beginning reports of the epidemic had reached them, and when it reached Massachusetts, they decided that it was time for the town to look to its defenses. On October 1, 1735, they called a consultation with several of the principal local physicians and Dr. Simon Tufts of Medford, who had seen some cases. The doctors were of little help, for they gave as their unanimous opinion, "That the said Distemper was Communicated by means of a bad Air, and not by Contagion."[34] Meanwhile a young man named How came to Boston from Exeter, where his brother had recently died of the disease, to see his mother in the South End. He became ill and called in Dr. Zabdiel Boylston, who recognized the sickness, but it was the Reverend Dr. Nathaniel Williams who reported it on October 7 to the Selectmen. They sent Dr. Hugh Kennedy to see the patient, but he and several other physicians maintained their conviction that the disease was not infectious. Despite this opinion, the Selectmen, with a layman's appreciation of the fact that the epidemic had apparently spread from one town to the next, decided to act on the theory that it was. The Justices of the Peace, however, accepted the doctors' judgment and turned down repeated ap-

[32] This subject will be more fully discussed in the author's forthcoming paper on "Smallpox Inoculation in Colonial Boston."

[33] Ernest Caulfield, "A History of the Terrible Epidemic, Vulgarly Called the Throat Distemper, as It Occurred in His Majesty's New England Colonies between 1735 and 1740," *Yale Journal of Biology and Medicine*, XI (1938-39), 226-246.

[34] Boston Record Commissioners, *Report*, XIII, 280.

plications for the warrant required by law to remove the sick man to the pesthouse. When the town officials applied to Widow How for her permission, she flatly refused. As a last resort, they apointed guards to watch the house and prevent any communication with those inside, a standard procedure developed for isolating smallpox cases. A few days later How died. The disease did not spread in the neighborhood, and apparently the Selectmen's efforts had been successful.[35]

As a result of this incident and, perhaps, other rumors, some of the country people were becoming alarmed about sickness in Boston. Fearing that this would damage trade, the Selectmen published a reassuring advertisement certifying that no one was known to be sick of the eastward distemper, as it was called, and that it was "as healthy a Time here as has been known for many Years past." [36] Actually, late in August several children in the North End had come down with white specks in their throats and rashes. Toward the end of September several cases appeared with "a complaint of *soreness in the Throat, Tonsils swelled and speckt, Uvula relaxed, slight Fever, flush in the Face, and an Erysipelas like efflorescence on the neck, chest and extremities;* but being of no fatal or bad consequence, nothing more than a common cold was suspected." [37] Then came the How case. For a while the situation continued fairly quiet, but early in November the disease spread more widely, especially among children, with more severe symptoms and some deaths. By now the physicians realized that the dread "eastern distemper" had stricken Boston. The new medical society sent out questionnaires to several country doctors asking for descriptions of the disease, case histories, and methods of treatment. The epidemic reached a peak in March. Fortunately, however, it proved far less deadly than it was in the country towns. According to Douglass's calculations, about one third to one sixth of the cases ended fatally in the country, while in Boston the rate was only one in thirty-five.[38]

Except for the Selectmen's outburst of activity when informed of

[35] *Ibid.*, XIII, 281; William Douglass, *The Practical History of a New Epidemical Eruptive Miliary Fever, with an Angina Ulcusculosa Which Prevailed in Boston New-England in the Years 1735 and 1736* (Boston, 1736), 2. This rare pamphlet, a classic description of scarlet fever, was republished in the *New England Journal of Medicine and Surgery, and Collateral Branches of Science*, XIV (1825), 1-13.

[36] *Boston Weekly News-Letter*, Oct. 23, 1735; Boston Record Commissioners, *Report*, XIII, 279-280.

[37] Douglass, *Practical History of a New Fever*, 2.

[38] *Boston Weekly News-Letter*, Feb. 19, 1735/36; Douglass, *Practical History of a New Fever*, 2-3, 16.

How's sickness, they let the epidemic freely run its course. Since the physicians did not inform them of any other cases, they could not isolate the sick. Probably they believed that as with smallpox, once it was well started they could do nothing about it, and compared to the past visitations of the latter disease it was not very serious. Perhaps they came to believe the medical opinion. In any event they found it convenient. When in April, 1736, some merchants complained that the embargo placed on goods from Boston by the apprehensive people in neighboring colonies threatened their business, the Selectmen asked several physicians for a written opinion on the communicability of the disease. The latter obliged with a statement that "after many Months Observation, we conclude, That the present prevailing Distemper appears to us to *proceed from some Affection of the Air, and not from any personal Infection receiv'd from the Sick, or Goods in their Neighbourhood.*" To inform "the Trading Part of our neighbouring Colonies," the Selectmen promptly inserted this in the newspaper.[39] In Boston the epidemic disappeared near the end of 1736. For several years more it continued to affect other New England towns before it ceased to receive special attention in sermons and other publications.

This epidemic was unusual for several reasons. One curious fact was the much higher death rate in the country towns than in the capital. Douglass thought this was a result of the superior skill of Boston's physicians, but Dr. Ernest Caulfield, in a very able study of the whole epidemic, offers a more likely solution. Where Douglass's pamphlet is based on his own observations, it establishes that Boston was suffering from scarlet fever. But the difference in the death rate and several other factors lead Dr. Caulfield to conclude that the epidemic which started in Kingston was diphtheria and that it was the latter disease which desolated the country towns. Another striking feature was that, despite plentiful contact, Boston did not suffer a similar diphtheria epidemic. Her scarlet fever of 1735-36 had, of course, no connection with the diphtheria which started in Kingston except in the minds of men. The most plausible explanation, according to Dr. Caulfield, is that Boston enjoyed relative immunity because of previous endemic presence of diphtheria.[40]

The epidemic also illustrates well the etiological theories of the medical

[39] *Boston Weekly News-Letter*, April 29, 1736; Boston Record Commissioners, *Report*, XIII, 294.

[40] Caulfield, "Throat Distemper," *Yale Jour. Biol. and Med.*, XI (1938-39), 257-272, 280-282, 327-329.

profession. The country people and some ministers tended to accept a religious explanation. The more sophisticated Boston Selectmen, seeing the broad picture of the scourge moving from one town to the next, concluded that it was contagious. Intelligent doctors, on the other hand, who studied the subject closely, saw clearly that the disease did not spread in the same fashion as smallpox, the exemplar of contagious diseases, and noted certain aspects of the epidemic which seemed to prove that it was not contagious. It began in Kingston, and therefore, as Douglass noted, "it was no foreign importation, *Kingston* being an inland place, of no Trade or considerable communication." The next case occurred in a family four miles away, and it continued to spread gradually, "seizing here and there particular Families. . . ." After his study of what he thought to be the same disease in Boston, Douglass came to the conclusion that it was some new kind of epidemical disorder. It was not a creature of season, climate, or soil, having prevailed throughout the year in Boston and appeared from Maine to Carolina. It was not personally infecting, he noted, in the manner of smallpox or plague, for several children in families where the disease appeared escaped and many others were exposed without acquiring the sickness. To a man familiar with the writings of Sydenham, only one conclusion seemed possible: "*It does therefore proceed from some undiscovered quality of the air, affecting only peculiar constitutions of persons and families.*"[41]

Finally certain aspects illustrative of public health methods should be emphasized. In all their activities the Selectmen were in close contact with the town's leading physicians. Although at first they disagreed with the belief that the disease was not communicable, the fact that the Justices did rely on the medical opinion hampered their efforts to isolate the imported case. The doctors' etiological theory was also, no doubt, a factor in their failure to report to the Selectmen other cases besides How as they appeared. Perhaps the doctors' theory was also one of the major reasons why this was almost the only time between the yellow fever epidemic of 1693 and the recurrence of this same disease just a century later that the government officials of Massachusetts actively concerned themselves with any disease other than smallpox.

[41] Douglass, *Practical History of a New Fever*, 1, 12-14.

THE RISE OF PROFESSIONAL SURGERY IN THE UNITED STATES: 1800-1865

COURTNEY R. HALL

I

Fielding H. Garrison, in his useful history, tells us that up to John Hunter's time, surgery was preeminently in French hands, and that Paris "was the only place where the subject could be properly studied." Before that time, he adds, Cheselden and Pott were the only clinical surgeons of first rank in Great Britain, but like other mid-eighteenth century practitioners, they had no knowledge of pathology, despite the appearance of Morgagni's pioneer work in 1761. With Hunter, however, surgery "ceased to be regarded as a mere technical mode of treatment, and began to take its place as a branch of scientific medicine, firmly grounded in physiology and pathology." [1]

If we may accept such general statements as true, without inquiring too deeply how "properly" surgery could be studied, even in Paris, without the necessary work in physiology and pathology, it hardly seems accurate to speak of professional surgery as existing anywhere much prior to 1800. Hunter died in 1793 and the distinguished group of students who worked under him, and under his immediate successors, could hardly be ready to assume their professional activities until the early years of the next century. Moreover, since the great majority of early American surgeons gained their principal inspiration via the British stream of instruction, historians can hardly refer seriously to an American surgical specialty at any earlier period. Indeed, Samuel D. Gross, writing in 1876 of the preceding century of American surgery, declared there was still, at the time he wrote, no such distinct class of practitioners.[2]

Yet as early as 1868, Gross, while on a tour of Paris hospitals, was informed by the French surgeon Chassaignac that "America at the moment wields the surgical sceptre of the world." [3] Such a view, probably

[1] F. H. Garrison: *Introduction to the History of Medicine*, fourth edition, Philadelphia, 1929, pp. 341, 344-45. J. S. Billings (*History and Literature of Surgery*, Philadelphia, 1895, p. 87) gives powerful support to Garrison in his opinion of Hunter.

[2] S. D. Gross: "Surgery," in E. H. Clarke et al., *A Century of American Medicine*, Phila., 1876, p. 117.

[3] R. H. Shryock: *The Development of Modern Medicine*, New York, 1947, p. 178, citing Gross' *Autobiography*.

more favorable than the facts would warrant, may have reflected the mild furor created in European medical circles by the introduction of anaesthetics and by the attainments in gynecology of J. Marion Sims. In the United States the medical men who had studied with Dupuytren, Lisfranc and Louis were beginning to attract attention.[4]

Without attempting at once to unravel this inconsistency, it would be well to emphasize several factors which determined the course of early medicine and surgery in the United States. In the first place, the general backwardness of medicine in the late eighteenth century was most pronounced in countries like the United States where pioneer conditions and a resultant low level of educational activity persisted. There was almost no professional medical education in this country prior to 1800; standards for physicians were very low and almost no means existed of disseminating medical knowledge; there were no universities of British or Continental pattern and hospitals were almost completely lacking.[5]

Another condition followed the first very logically. In default of institutional, literary and clinical facilities to help furnish the nation with well-trained medical men, the more ambitious students sought instruction in the great European university and hospital centers. This trend, which began in the late colonial period, continued beyond the Revolution and for some time thereafter. Of course such a tendency was true not only of medical education, but of all advanced training in the arts and sciences. In medicine, however, it was even more necessary for Americans to seek instruction abroad, because only in the larger European cities were there universities and hospitals in which the most experienced teachers were to be found. In pursuing a European medical education, it was natural for the earlier American students to seek a British residence, because cultural contacts were closest with the British Isles. After the Napoleonic Wars the trend shifted away from Britain to France and later to Germany.[6] A third factor which exerted a marked influence upon American medicine and surgery was the American Revolution.

[4] R. H. Shryock: *op. cit.*, pp. 170-72; H. E. Sigerist: *American Medicine*, New York, 1934, pp. 105-09; Victor Robinson, *Victory Over Pain*, New York, 1946, pp. 141-71.

[5] Only four medical colleges offered instruction before 1800; only one medical journal had appeared by that time; there were but two hospitals, one at New York, the other at Philadelphia; no countrywide medical organization was formed until nearly fifty years later.

[6] Shryock considers the British influence predominant from 1750 to 1820; the French to about 1860; and the German influence strong thereafter (*American Medical Research*, New York, 1947, p. 9).

In view of these fairly well-understood background conditions of the profession, of which more will be said later, it is pertinent to inquire: did surgery, at first merely a "technical mode" of medical treatment and later achieving recognition as a "branch of scientific medicine" follow this general pattern of dependence, first upon one European country and then another? Also is it true, as Gross remarked, that even after a century of American independence, there was no "distinct class of surgeons" in this country? Or, on the other hand, was the Frenchman Chassaignac more nearly correct when he assigned a distinguished position to American surgery as early as 1868?

The first of these questions may be disposed of quite easily. The pattern of early surgical development followed that of general medical knowledge almost exactly. Since surgery arose principally as a method of medical treatment, as an emergency method when no other treatment could avail, this had to be the case. The only exceptions to the medical origin of surgery would lie in its connection with the old craft of barber-surgeon, which in some countries retained legal privileges well into the eighteenth century.[7] Yet even among the raw surgeon's mates who functioned in Washington's army at Cambridge in 1775-1776, there was a modicum of medical knowledge, for they were in many cases products of Dr. John Warren's anatomy course at Harvard.[8]

The problem of how soon one can speak accurately of a distinct class of American practitioners known as surgeons is a more difficult one. Obviously Samuel D. Gross, while a usually trustworthy reporter of medical matters, cannot help us here, since he gives evidence of the high recognition accorded American surgery, in one place, and denies that any such class of persons exists, in another. He even went so far as to say:

> It is not probable that America will ever again produce four surgeons of equal renown with Philip Syng Physick, John C. Warren, Valentine Mott and Benjamin W. Dudley.[9]

Existent or not, Gross packed his 1876 monograph full of the noteworthy achievements of surgeons whose careers were run in the pre-Listerian period.

[7] Bernard J. Stern: *Society and Medical Progress*, Princeton, 1941, pp. 178-79; Valentine Mott, *Travels in Europe and the East*, New York, 1842, pp. 71-72.

[8] Samuel F. Batchelder: "Harvard Military Surgeons of 1775," *Harvard Alumni Bulletin*, XIII, pp. 3-14.

[9] S. D. Gross: *op. cit.*, p. 128. The four mentioned had passed away by the end of the Civil War, except Dudley, who lived until 1870.

Since the conflicting statements of Gross seem characteristic of much of our surgical historical literature, this may be a fitting time to inquire about the beginnings of American surgery as a distinct specialty. Surgeons surely existed in the early United States, even in the colonial period. Who were these men, and how did they come to be designated as surgeons? Some quite remarkable achievements have been attributed to them during the half-century or more prior to the Civil War. Were these exploits known mostly because of their rarity on this side of the Atlantic? Were they publicized widely as evidence of American prowess to an unsympathetic world? [10]

There has always been a temptation to fight back at slighting statements about the meagre achievements of Americans in science and the arts. Americans have been quite vocal about what they have accomplished, and it is no doubt true that matters of little moment in the general history of mankind have received undue attention from American pens, simply because they have been American. It has seemed necessary, frequently, to assert our cultural worth to persons not disposed to take us seriously. One eminent surgeon lashed out at such critics to a graduating class in the following tribute to his professional colleagues:

> In this 'go ahead' century they may not dive so deeply into abstract sciences, or linger there so long as in the old and somewhat *senile* establishments of Europe, but I repeat, as skillful operators, and practical men, they are the equals to any in the world, and second to none whatsoever.[11]

II

Having assumed that little professional surgery existed in Europe or elsewhere prior to the end of the 18th century, it would be obviously incorrect to suppose that the rather crude activity which went on in America would provide any exception to such an assumption. In the American colonies there appeared occasional individuals dignified by the title of surgeon or "chirurgeon." Such a one was Thomas Wotton (or Woolton), surgeon-general of the London Company, who sailed for Virginia in 1606. In some few cases, as in that of the younger John

[10] Sydney Smith included American doctors and surgeons in his famous attack upon things American in the *Edinburgh Review* for January, 1820. The first issue of the *Philadelphia Journal of the Medical and Physical Sciences* (Nov. 1820) carried Smith's challenge on its title page.

[11] Valentine Mott: *Address before the Graduates of the University Medical College*. New York, ca. 1859, p. 14 (Ms in New York Academy of Medicine).

Winthrop and Cadwallader Colden the elder,[12] colonial medics may have received some formal training in Europe, but usually colonial surgeons could boast of no training or experience other than that of barber-surgeon.[13]

As the eighteenth century advanced, however, several developments indicated some progress towards professional medical and surgical standing. In the first place, young Americans began to arrive at the leading European medical centers for advanced training. This movement began in the 1740's and accelerated with the years; in the thirty years just prior to the adoption of the Constitution, for example, some sixty-three Americans took medical degrees at Edinburgh alone; others entered schools at Leyden, Rheims, Paris, and London.

A second background element which should be noted was the founding of medical schools at Philadelphia, New York, Cambridge, and Hanover. From the beginning these schools recognized surgery as a subject of instruction. William Shippen, graduate of Edinburgh and a private teacher of anatomy since 1762, became professor of anatomy and surgery at Philadelphia in 1765; John Jones, student of Cheselden and Pott in London, and of Petit and Le Dran at Paris, was the first surgical instructor at King's in New York. John Warren, of Revolutionary fame, occupied the new chair at Harvard in 1782, and Nathan Smith, trained at Edinburgh and London, carried all medical subjects in the school at Dartmouth, including surgery.[14]

Students were few in the eighteenth century American medical colleges; the degree of M. D. was not granted until 1770, and then to only one individual. At the outbreak of the Revolution, therefore, there existed a mere handful of formally trained doctors, most of them European in their education; the net value of the Revolutionary experience to American medicine and surgery was therefore decidedly limited.[15]

[12] Cadwallader Colden (1688-1776) took his medical degree at Edinburgh in 1705.

[13] James G. Mumford: *A Narrative of Medicine in America*, Philadelphia, 1903, ch. 1-4; Francis R. Packard, *History of Medicine in the United States*, New York, 1931, ch. 4, 6; Samuel X. Radbill: "The Barber Surgeons among the Early Dutch and Swedes along the Delaware," *Bull. Hist. Med.*, IV, pp. 718-44 (Nov. 1936).

[14] J. S. Billings: *op. cit.*, pp. 132, 134; F. H. Garrison: *op. cit.*, p. 405; A. S. Lobingier: "The Influence of the British Masters upon American Surgery," *Amer. Jour. Surg.*, NS, VI (June, 1929), pp. 827-36.

[15] C. H. Van Tyne: *The War of Independence*, Boston, 1929, pp. 278-79; G. O. Trevelyan: *The American Revolution*, London, 1899-1907, Part III, p. 62; C. R. Hall: "The Beginnings of American Military Medicine," *Annals Med. Hist.*, Third Series, IV (Mar. 1942), p. 129.

Native medical and surgical literature had its beginning during the Revolution. James Thacher's *Military Journal* was better known for its general information than for valuable professional data; John Jones produced for the military surgeons his *Plain, Concise, Practical Remarks on the Treatment of Wounds and Fractures;* surgeons in the Army, including Isaac Senter and James Tilton, kept diaries and journals which were afterwards published.[16] The War did stimulate medical education, as the schools at Harvard and Dartmouth and later at Transylvania indicate; medical journals began to appear after the War, as the general advancement of education began its uninterrupted course.

The actual performance of operative surgery seems to have been bad during the War. The surgeons lacked skill, instruments, and supplies and were usually inferior to the physicians in their training. A few names stand out among the surgical personnel of the time: Shippen, Church, Warren, and Cochran were well-trained men, but Colonel Ashburn, in his standard history, could find very little "in which to take pride" in the medical and surgical history of the Revolution.[17]

Thus the eighteenth century was merely prologue, so far as scientific American surgery was concerned. The United States was too new, politically and culturally, to have initiated any marked advancement in science and the arts. Yet most ot the conditions which did produce a talented group of American surgeons already existed; medical schools had been started in which instruction in anatomy and surgery was offered; medical societies and medical publications were beginning to appear; the departure of young men for advanced study in the older schools of medicine in Europe was accelerating.

Garrison summarized American surgery of the "pre-Listerian period"[18] as composed mainly of three kinds of achievement: first of all, there was a good deal of "bold operating" on the vascular and osseous systems; secondly, he mentioned the foundation work in modern operative gynecology; lastly, there was the introduction of surgical anaesthesia. The

[16] W. D. Postell: *The Development of Medical Literature*, New Orleans, 1943, p. 89; S. D. Gross: *History of American Medical Literature*, Philadelphia, 1875, p. 80; P. M. Ashburn: *A History of the Medical Department of the United States Army*, Boston, 1929, pp. 8-9, 11-12.

[17] Ashburn: *op. cit.*, p. 21; J. G. Mumford: *op. cit.*, pp. 115-116, cites numerous cases of crudity and inefficiency in the medical and surgical area of the Revolution.

[18] For the purposes of this paper, the pre-Listerian period may be terminated at 1867, the date of publication of Lord Lister's important paper: "On the Antiseptic Principle in the Practice of Surgery," in the London *Lancet*.

leaders in these developments were said to be Philip Syng Physick, the two Warrens (John and John C.), Wright Post, Valentine Mott, William Gibson, the two Smiths (Nathan and Nathan R.), Ephraim McDowell, Willard Parker, and J. Marion Sims.[10]

This has been the usual picture in the rather scanty accounts of early American surgery. We read of the operations of Physick in the pages of his nephew, John Syng Dorsey; the early work of Post on the arteries; the commendable work of the two Warrens, high-lighted by the founding of the Harvard Medical School in the case of the former, and by the successful demonstration of ether in the Massachusetts General Hospital, which has always added lustre to the fame of the younger man. Historians have usually added some notice of the daring and often fantastic operations of Valentine Mott, of the versatility of Nathan Smith as a teacher, and of the pioneer operations of McDowell and Sims. Here the story usually ends, so far as American pre-Listerian surgery is concerned.

The question arises as to the adequacy of this impression, conveyed quite generally in histories of medicine. A mere handful of surgeons, the impression goes, did a goodly amount of work prior to 1867 or so, but aside from the practice of administering ether, some pioneer work in gynecology and a fair amount of repair surgery on bones and arteries, they did not figure heavily in the world of surgery and are scarcely important enough to be considered a professional class.

The history of the United States from 1800 to the end of the Civil War makes such a quick disposal of the matter highly dangerous, for in that period social and economic changes had caused a very rapid development in the medical sciences. The nation expanded enormously in population; more than five times as many persons lived in the United States during the Civil War as at the turn of the century; cities of 100,000 were becoming fairly common by the latter period. In the seaport towns especially there was a marked increase in the number of medical practitioners; medical societies were springing up everywhere and so were medical colleges. Another factor, highly significant to surgery, was the occurrence of three wars within the period. Two were nearly negligible, but the other, the War of 1861-65, was one of the greatest of modern conflicts. From it the United States emerged as one of the leading powers of the world; in the conflict some four million men had been mobilized and thousands of medical and surgical personnel had served with the Union and Confederate Armies.

[10] F. H. Garrison: *op. cit.*, pp. 498-99.

The vast material progress of the United States to 1865, taken together with the concentration of population which had already proceeded quite far, suggests a corresponding advance in science and the arts which usually accompanies such growth in our Western civilization. It is possible that the importance of early American medicine and surgery has been minimized incorrectly. It has become conventional, in cultural history, to expect, and even insist, that new countries proceed to a point of high development only through slow stages, after a lengthy cultural apprenticeship to older, wiser nations. Despite the general accuracy of such an assumption, it is possible that the application of such a principle to all human activity may be a serious error.

Examination of the progress of the various sciences should be made without a preliminary assumption that it will follow a pattern similar to other types of activity. In order to determine a reasonable point at which American surgery can be said to have become a distinct medical specialty, we should examine first the quality of training obtained by our early surgeons and then analyze the success with which they put into practice the scientific knowledge which they acquired. Did they reach a position comparable to that of their eminent teachers, in the pre-Listerian period, and if so, when was that position attained?

III

In the late eighteenth century the surgeon and the surgical anatomist everywhere suffered from a type of discrimination which came from several sources. As representative of a craft rather than a profession the surgeon was regarded as an inferior person. Moreover, having received little education, usually, he compared unfavorably with the physician, who in Europe was a university man and was therefore considered a gentleman.[20] This low public esteem was in no wise bettered, at first, by his purchase of a commission in the army, for in Great Britain, at least, he received no rank and was merely placed on the lists after the last ensign, along with the quartermaster and the chaplain.[21] In addition, in most countries, there was powerful prejudice against all persons, whether surgeons, anatomists or lowly henchmen of the hospitals, who were implicated in any way in disturbing the repose of the dead.

Despite such obstacles, which confronted the young American who wanted to become a surgeon, increasing numbers of them came to Edinburgh, where the tradition of expert instruction in anatomy had been

[20] H. E. Sigerist: *op. cit.*, p. 41.

[21] C. R. Hall: *op. cit.*, pp. 122-23.

established long before by the Munro dynasty, and was being extended, into the physiological and surgical fields, by John Bell and his brother, Sir Charles Bell. Just as important as the Edinburgh school were the hospitals of Southwark and Smithfield, near London. William and John Hunter had made St. Thomas' and Guy's in Southwark a Mecca for the surgical students of all nations; at Bartholomew's in Smithfield a similar tradition of able instruction had been built by Percival Pott and John Abernethy. John Hunter and many of the other surgeon-anatomists gave series of private lectures in which medical students could enroll by the payment of a fee to the lecturer.

One young American, Benjamin Waterhouse, lost no time in joining the class of Hunter, that "prince of physiologists" to whom, he said later, he owed more than to any public teacher he had ever known. At Hunter's house in Jermyn Street, students crowded the dissecting room, and it was there that they could examine the great collection of anatomical and pathological specimens "which overflowed the house." Hunter, it was said, had dissected everything in the animal kingdom, even Bengal tigers.[22]

The Hunterian tradition was maintained, after his death, by a series of able teachers like John Abernethy, Henry Cline, Astley Cooper, and John Haighton, who became lecturers in the Hospitals in the early years of the nineteenth century, and American students, among others, continued to throng their lecture rooms. Of all the teachers of surgical anatomy of the first decades of the century, Cooper was the most able and the most popular.

When Americans first began their journeys toward the great British centers, they came often with letters of recommendation from prominent Americans, as Benjamin Franklin and Cadwallader Colden. In this way the paths of John Morgan, William Shippen, Samuel Bard, and Benjamin Rush, among many, were smoothed, as they began their studies abroad. Franklin's close friend, the wealthy London practitioner Dr. John Fothergill, took a number of young Americans "under his protecting wing," including Morgan, Rush, and Waterhouse.[23] Philip Syng Physick was a student and friend of John Hunter, who was so impressed with the young

[22] J. S. Billings: *op. cit.*, p. 85; J. C. Trent: "The London Years of Benjamin Waterhouse," *Jour. Hist. Med. and Allied Sci.*, I (Jan. 1946), pp 31-32; Stephen Paget: *John Hunter, Man of Science and Surgeon, 1728-93*, New York, 1928, p. 102; H. W. Jones; "A Portrait Gallery of Physicians," *Ann. Med. Hist.*, NS, IX (Nov. 1917), p. 527.

[23] M. Kraus: *Intercolonial Aspects of American Culture on the Eve of the Revolution*, New York, 1928, p. 128.

man's qualities, that he urged him to stay in London and become his partner, but Physick declined and moved to Edinburgh, where he took his degree in 1792. William Gibson studied with John and Charles Bell of that University. Wright Post studied with Sheldon, a London pupil of John Hunter. James Lloyd, a pioneer lithotomist and later a leading surgeon of Boston, had been earlier a pupil of Cheselden and William Hunter. Valentine Mott worked under Henry Cline (anatomist at St. Thomas') and under Astley Cooper and John Haighton at Guy's, then journeyed to Edinburgh to pursue his studies under Gregory, Hope, and Playfair. But it was Astley Cooper whose skillful operations on the large blood vessels inspired the young New Yorker, and gave him definite suggestions as to the direction of his own surgical career.[24]

Benjamin W. Dudley, who was to make an enviable reputation in the United States as a lithotomist, worked under Cooper, Cline, and Abernethy in London and with Boyer, Larrey and Dubois in Paris. Ephraim McDowell, the founder of ovariotomy, was a pupil of John Bell of Edinburgh. J. Kearney Rodgers, New York pupil of Post, continued his surgical studies with Cooper, Abernethy, Benjamin Brodie, and Benjamin Travers.[25] To extend the list is useless. It is clear that the great British masters of Edinburgh and London exercised a direct and powerful influence upon a large proportion of the young men who were to be the leading surgeons of America. Two generations of Americans, from John Jones, who began his foreign study under William Hunter and Percival Pott, in the 1750's, through the group which included Mott, McDowell, Dudley, and John C. Warren, (who dominated early nineteenth century American surgery) built up this tradition.[26] Following the Napoleonic Wars, and due in part to their cessation, a drift of American students to Paris succeeded the earlier trend to Britain, and there entered the lecture rooms and clinics of Larrey, Broussais, Louis, and Dupuytren.[27]

It should be kept in mind that the majority of Americans who were students of the great British and French teachers of surgery and related subjects were already physicians; their basic training and experience had been gained in the early American medical schools or under competent teachers privately. This is true particularly of the second generation of

[24] W. Hale-White: *Great Doctors of the Nineteenth Century*, London, 1935, p. 27; A. Castiglioni: *History of Medicine*, New York, 1941, p. 628; A. S. Lobingier: *op. cit.*, pp. 827-36.

[25] S. D. Gross: *op. cit.*, pp. 121, 125, 131.

[26] F. H. Garrison: *op. cit.*, p. 499.

[27] H. E. Sigerist: *op. cit.*, pp. 111-12.

Americans, who went abroad from about 1790 to 1820. Therefore the lecture method of instruction, reinforced as it was in the London hospitals by clinical methods, and aided by the use of the large anatomical and pathological collections of Hunter, Cooper, and others, was undoubtedly of special value to them.[28]

IV

Surgeons of the early nineteenth century were much interested in aneurysm and there had been some difference of opinion among medical men as to the proper method of arresting this dangerous disease. The general fear of surgery had led some to advise the " reduction " treatment as practised by M. Pelleton of the Hôtel Dieu. Diagnosis was frequently faulty, leading some practitioners to pronounce a swelling an aneurysm when it was not. In advanced stages there was little to do for the sufferer but to try surgery, but small hope of recovery was entertained, in the more difficult cases.

The surgical method of curing the disease was generally agreed to be ligation of the affected vessel on the side nearest the heart, in order to cut the flow of blood through the diseased portion, after which the other arteries would take over the increased flow of blood. Many surgeons tried operations on the arteries without success. Sir Astley Cooper himself was unsuccessful in his early efforts to tie the carotid artery for aneurysm; early operations on the subclavian failed because of the intricacy of the task and because of a lack of proper needles to secure the ligature about the vessel.[29]

Most surgeons of the early 1800's gave considerable attention to operations of this sort, after the accepted method was advanced by John Hunter several years previously.[30] Samuel D. Gross gave considerable credit to the " daring and brilliant " work of Americans in the surgery

[28] R. H. Shryock (*Development of Modern Medicine*, p. 62) states that John Hunter's collection of anatomical specimens, the pioneer private museum of its kind, contained 13,000 items. He adds (*op. cit.*, pp. 172-73) that American students in Paris were particularly interested in those surgeons who, like Larrey, Dupuytren, and Lisfranc, had profitted from the lessons of military surgery. The French had led in the development of "localized pathology," in tracing disease to specific organs, thereby calling for surgery as an alternative to purely medical treatment.

[29] S. Cooper: *First Lines of the Practice of Surgery*, New York, 1822, pp. 287-323; Valentine Mott: "Case of Subclavian Aneurysm, which occurred in Guy's Hospital, London." *Ms* in New York Academy of Medicine, pub. in *Med. Repos.*, X, pp. 331-34 (1810).

[30] R. H. Shryock: *op. cit.*, p. 62.

of the blood vessels, to relieve hemorrhages in wounds of the cervical region, in cases of aneurysm and to cure morbid growths. Wright Post of New York first successfully tied the common carotid artery for aneurysm in 1813; four years later he ligated the subclavian for the same disease, after such renowned British operators as John Abernethy and Astley Cooper had attempted operations on the same vessel, but had lost their patients. Valentine Mott ligated the common carotid artery fifty-one times, usually with success,[31] and the subclavian operation was performed by Mott, J. K. Rodgers, and Willard Parker. Besides Mott's many successes on the common carotid and eight on the subclavian, his artery operations included one of the innominate, two of the external carotid, one of the common iliac,[32] six of the external iliac, two of the internal iliac, fifty-seven of the femoral and ten of the popliteal, a total of 138 operations on the larger arteries. Gross praises Mott's vascular achievements by saying:

> No surgeon, living or dead, ever tied so many vessels, or so successfully, for the cure of aneurism, the relief of injury, or the arrest of morbid growths.[33]

American surgeons of the early period were also inventors of various improvements in arterial operative practice. Mott was the designer of an improved aneurysmic needle. A metallic ligature for arteries, especially the larger ones, was demonstrated in a medical thesis by Henry S. Levert of Mobile, Alabama, while a student of Physick in Philadelphia. Wire ligatures came into quite general use; Gross himself was using them in his operative practice at the time of the Civil War. Wire loops as substitutes for ligatures in amputations and other serious operations were introduced in 1859 by A. M. Pollack of Pittsburgh as easier to apply and remove, because they assisted the union of the wound by first intention and in-

[31] One of Mott's successful operations on the common carotid for aneurysm was the case of a three-months old infant, described in *Amer. Jour. Med. Sci.*, Nov. 1830, p. 271.

[32] The first successful case of its kind, reported in *Philadelphia Jour. Med. Sci.*, I, pp. 156-61 (1827).

[33] S. D. Gross: *op. cit.*, pp. 133-37, 141. The operation which caused most attention was Mott's attempt, in 1818, to tie the innominate artery for subclavian aneurysm, since the affected artery was judged too badly diseased for ligation; his patient died from secondary hemorrhage after twenty-six days; many other surgeons in this and other countries followed Mott in his attempt, including von Graefe of Berlin and M. Arendt, private surgeon to the Czar Nicholas I. It was first accomplished, however, by an American, Dr. A. W. Smyth of New Orleans, in 1864. Smyth prevented the usual hemorrhage by ligating two other arteries as well as the innominate. (See I. S. Cutter: "Valentine Mott and ligation of the arteria innominata," *Int. Abst. Surg.*, XLVII, pp. 291-93 [1928]).

curred less danger of secondary hemorrhage. At an earlier period, Physick had preferred "animal" ligatures as less irritative and used well-prepared buckskin thongs, rolled on a marble slab; his nephew and successor Dorsey had varied this by the use of ligatures of French kid, because they would dissolve in the wound in a few days! Gross, writing of his own practice, added his preference for silk thread, "well-waxed and firmly applied." Dr. Jonathan Knight of the Yale Medical School was credited with the first cure of aneurysm by digital compression in 1847; American surgeons practiced subcutaneous ligation for varicose veins in the early period, though Gross does not specify the time of beginning such operations.[34]

Extended discussion of vascular surgery is unnecessary here, since the early issues of American medical journals are filled with examples of it, and general historians give lists of dozens of such operations by Americans in the pre-Listerian period.[35] A brief treatment of this phase of surgery is not intended as establishing priority, in time, of particular operations; they became quite commonplace by the mid-century on both sides of the Atlantic. Rather it is to illustrate that methods in a particular type of surgery, as taught by Hunter, Cooper, Abernethy, and John Bell were well-learned by their American pupils, who soon became in many ways the equals of their teachers.

Samuel D. Gross, who may hardly be charged with understating the American surgeon's claim to fame, went so far as to assert that in the treatment of fractures of the long bones, "we are . . . decidedly in advance of every other nation." In support of his opinion, he went on to commend Physick's improved splints for leg and thigh fractures, the apparatus devised by Gurdon Buck of New York for supporting fractured limbs without splints (1861) and the anterior splint of Dr. Nathan R. Smith of Baltimore, which was used by surgeons of both the Union and Confederate Armies during the Civil War. Likewise commendable was the bran dressing devised by Dr. J. R. Barton of Philadelphia in compound leg fractures as comfortable to the patient and a protection against insects.[36]

American surgeons had fertile minds in devising special boxes, beds, and chairs for fracture patients. Physick's first use of the seton for

[34] S. D. Gross: *op. cit.*, pp. 142-45.
[35] F. H. Garrison: *op. cit.*, pp. 500-03.
[36] S. D. Gross: *op. cit.*, pp. 146-48.

ununited fractures in 1802 was copied widely and enjoyed great popularity for many years. Joseph Pancoast of New Jersey devised a method in 1857 of connecting bone fragments with an iron screw which Gross declared efficient and safe, especially in femur and humerus cases. After 1855 or so, Americans began to simplify the reduction of dislocations by manipulation, and the use of pulleys and bags of shot became obsolete. There were some rather early operations in the United States for bony ankylosis in which portions of joints were removed and false joints established.[37] John R. Barton was apparently the pioneer in operations of this kind, beginning in 1826.[38]

Gross was even more enthusiastic regarding American treatment of affections of the joints. Physick was famous for his advocacy of rest in all " maladies of movable articulations," especially for posterior curvature of the spine (Pott's Disease) and for coxalgia. In cure of the latter, Physick counselled a rest period of twelve months, on the average, with the patient lying down, in a special splint.[39] Henry M. Onderdonk and David L. Rogers, two New York surgeons, in 1813 and 1824, respectively, turned to vascular surgery in wounds of the knee joint, performing ligations of the femoral artery to relieve dangerous inflammation of the lower limbs.[40]

The history of early American amputations shows special concern for saving the patient's life, as was probably the case everywhere in the pre-Listerian period, for it was always a hazardous operation.[41] It is quite probable that many amputations which were performed could have been avoided by a knowledge of conservative surgery; the hazards of infection and surgical shock caused hordes of fatalities in the early days. Committed to amputation in cases of compound fracture, early surgeons everywhere inflicted serious sufferings on their patients and failure of the operation was more frequent than success. Even if the patient survived the operation, the spectres of post-operational hemorrhage or fatal infection remained.[42]

[37] *Ibid.*, pp. 149-51, 155-57.

[38] Reported in *No. Amer. Med. and Surg. Jour.*, III, pp. 279, 400.

[39] S. D. Gross: *op. cit.*, pp. 157-58.

[40] Onderdonk's operation is reported in *Amer. Med. and Phil. Reg.*, IV, p. 176; both operations are mentioned in Samuel W. Gross (son of S. D. Gross): " The Impress of American Surgery upon Surgical Practice," *Coll. and Clinical Record*, Nov. 1884, p. 11.

[41] Even in the 1870's, the fatalities from amputations were extremely large. R. H. Shryock (*Development of Modern Medicine*, p. 180) states that of 13,000 amputations in the Franco-Prussian War, 10,000 were fatal.

[42] E. H. Pool and F. J. McGowan: *Surgery at the New York Hospital One Hundred Years Ago*, New York, 1930, pp. 13, 29, 46, 55, 104-5.

John Warren was probably the first American surgeon to remove the arm at the shoulder joint, an operation which he performed in 1781. In 1806 Walter Brashear of Bardstown, Kentucky, pioneered with a successful amputation of the leg at the hip joint; he was followed in this operation by Valentine Mott, who accomplished it successfully at the New York Hospital in 1824. It was believed at first that Mott's case was the first on record, as no contemporary account of the Kentucky operation was ever published. It was authenticated later, however, by S. D. Gross in an historical study of Kentucky surgery during the latter's residence in that state. Mott's operation was complicated by the fact that the patient was a young boy and also because the bone disintegration, which had followed a fracture of the femur, had proceeded higher than at first believed, necessitating a second operation. In each of the two hip operations, nearly a quarter of the body was removed, yet both patients survived.[43] Later S. D. Gross and Joseph Pancoast each performed two successful operations of this sort. The only successful case of similar kind performed during the Civil War was by Dr. Edward Shippen of Philadelphia, in a case caused by gunshot wound.[44]

Americans also performed some impressive excisions in cases of advanced bone disease. Valentine Mott removed the clavicle in its entirety in 1828, in a case of osteo-sarcoma. An immense tumor, the size of a man's doubled fist, had formed rapidly on a patient's upper chest. In this operation, which took Mott four hours to complete, it was necessary to tie the external jugular vein twice and during other phases of the arduous task, some forty arteries as well. The patient recovered the use of his arm and survived the ordeal for more than fifty years.[45]

Samuel D. Gross had much to say regarding this particular operation in a memoir on Mott, partly because he had unwittingly contributed to historical error at a former time by ascribing priority in such surgery to a Kentucky surgeon, a Dr. McCreary, who had excised a clavicle in a patient who had contracted a carious bone condition. Upon further investigation, Gross said, he had become convinced that the two cases were utterly unlike; the Kentucky case was one "of simple caries," with no

[43] E. H. Pool and F. J. McGowan: *op. cit.* Case 88, pp. 99-103; S. D. Gross, *Memoir of Valentine Mott,* Philadelphia, 1868, p. 44; *Phila. Jour. Med. and Phys. Sci.,* XIV, pp. 101-04 (1827).

[44] S. D. Gross: "Surgery" in Clarke et al., *op. cit.,* p. 161.

[45] Valentine Mott: "An Account of Osteo-Sarcoma of the Left Clavicle," *Amer. Jour. Med. Sci.,* III (1828), pp. 101-08; S. W. Gross: *op. cit.,* p. 7.

swelling above the bone, and required no particular skill to excise it. He stated further:

> In Dr. Mott's case matters were entirely different . . . there was a tumor of large size . . . with powerful adhesions . . . in close proximity not only with large arteries, veins and nerves, but even the pleura and lung, and which only a surgeon of the most consummate coolness and dexterity could sever. I doubt very much whether the annals of surgery, ancient or modern, present a parallel case, one requiring such an amount of anatomical knowledge, judgment, skill and patience.[46]

There was much in Mott's surgical career which looked to the future rather than the routine pattern of his own day. He applauded Velpeau's detestation of the heavy doping of patients to render them less restive during an operation, particularly the dangerous doses of spirits which some surgeons were accustomed to give.[47] He was likewise well ahead of his time in his careful provisions for the post-operational care of his patients. Garrison has correctly asserted that we should not count Mott's surgical triumphs as outstanding, " were it not for his wonderful record of recoveries due to constant solicitude for his patients." [48] He also wrote effectively upon the subject of anesthesia and upon the imperfectly understood theme of surgical shock, during the Civil War period.[49]

There was almost no end of bone and joint operations by early nineteenth century American surgeons. W. H. Deaderick of Winchester, Virginia, excised part of the lower jaw in 1810; Surgeon James Mann of the Army amputated at the elbow joint in 1821; Milton Anthony of Georgia removed the fifth and sixth ribs, with a portion of gangrenous lung, in 1821; David L. Rodgers of New York removed most of both upper jaws in 1824; Nathan Smith of Massachusetts amputated at the knee joint in the same year. In 1834 John C. Warren of Boston excised the elbow joint; there were many removals of the scapula for sarcomatous or enchondromatous disease; Horatio Jameson of Baltimore removed the entire jaw bone on one side, leaving only the roof of the antrum, in 1820; Mott repeated Deaderick's lower jaw operation in 1821, but disarticulated the bone and sawed it off at the chin; at about the same time J. W. Schmidt of New Orleans, J. W. Carnochan of New York, and

[46] S. D. Gross: *Memoir of Valentine Mott*, pp. 47-48.

[47] Alfred A. L. M. Velpeau: *New Elements of Operative Surgery*, New York, 1845. (American edition, with notes by V. Mott), I, pp. 22-24, 63.

[48] F. H. Garison: " Valentine Mott," *Bull. N. Y. Acad. Med.*, Aug. 1925, p. 210.

[49] Valentine Mott: " Pain and Anaesthetics." *Introduction to a series of medical and surgical monographs prepared by request of the Sanitary Commission.* 2nd ed. Wash., 1863, pp. 5-16.

Valentine Mott performed operations for the relief of false ankylosis of the lower jaw; in his operation Mott had to devise a special apparatus on the screw and lever principles to dilate the jaw.[50]

Lithotomy, or "cutting for the stone" was a very old operation. The lateral incision, used by most American lithotomists, was perfected before the mid-eighteenth century by Percival Pott and was introduced into the United States about 1760 by John Jones, one of Pott's students. There is some evidence that Benjamin W. Dudley of Lexington, Kentucky, was the greatest of American operators, with a record of more than two hundred cases, with only a half dozen fatalities.[51] Physick achieved more fame than Dudley for this operation, perhaps because of the careful recording of his operations by his nephew Dorsey, and also because of his operation, a very difficulty one, upon Chief Justice Marshall.[52] S. D. Gross made a very interesting comparison of American and European results in lithotomy in his treatise on the urinary bladder, which first appeared in 1851. Of 895 cases by twenty-one different operators (including Dudley, Physick, William Gibson, A. H. Stevens, N. R. Smith, Gurdon Buck, Paul Eve, Mott, and Gross himself) only forty-four ended fatally. Out of 1596 lithotomies by sixteen European operators, including Cheselden, Liston, Bransby Cooper, P. M. Martineau, and John Crichton among British surgeons; Claude Ponteau of Lyons and Vincent Kern of Vienna, there occurred 132 fatalities. The American record is therefore the better, with one death in about twenty cases against the British and Continental record of one death in about twelve.[53]

[50] F. H. Garrison: *Introduction to the History of Medicine*, p. 503; S. D. Gross: "Surgery," Clarke et al.: *op. cit.*, pp. 171-74; J. M. Carnochan: *Contributions to Operative Surgery and Surgical Pathology*, Phila., 1858, pp. 18-28; J. S. Billings: *op. cit.*, p. 142; Paul F. Eve, a professor of surgery in the University of Nashville, collected some statistics on amputations at the hip-joint (*Ibid.*: *A Collection of Remarkable Cases in Surgery*, Phila., 1857, p. 562), which are as follows:

	Cases	Recoveries
Continental Europe	35	14
England	25	11
United States	11	8

[51] F. H. Garrison (*op. cit.*, p. 504) credits Dudley with 225 cases with six fatalities; S. D. Gross ("Surgery," p. 189) lists 207, but indicates a doubt as to the precise number, as Dudley kept no record of his cases and this number was reported by an assistant of Dudley from memory.

[52] An interesting recent account of the operation on John Marshall is Alexander Randall: "Philip Syng Physick's Last Major Operation," *Ann. Med. Hist.*, NS, IX, pp. 133-41 (Mar. 1937).

[53] S. D. Gross: *A Practical Treatise of the Diseases, Injuries and Malformations of the Urinary Bladder*, 2nd ed., Phila., 1855, pp. 603-04.

Not too much should be deduced from the foregoing figures, however, since from more careful examination of them we find that three of the Americans (Dudley, Mott, and Mettauer) performed more than half of the cases Gross reported. Thus his figures have to do more with the three most prominent lithotomists than with lithotomists in general. One wonders how well the Americans would fare if equal numbers of cases were compared, here and abroad. Yet in numbers of cases and in percentage of recoveries, individual Americans seem to have compared very favorably with the surgeons of the Old World.[54]

It seems likely that lithotrity, a method of breaking the bladder calculi in order that a patient might pass them, instead of resorting to surgical incision, was performed in New York as early as 1830 by a surgeon named Depeyre. While American surgeons, including Gibson, Pancoast, Buck, and others were soon following Depeyre's lead in this operation, the method apparently originated in France where Civiale, d'Etiolles, and Heurteloup were arguing violently about priority in the late 1830's. Mott, in his extensive travels in Europe after 1835, noted with extreme admiration the marvelous skill of Civiale in this comparatively painless operation, in a visit to his operating room at the Hospital of Necker.[55]

American achievements in gynecology have received much attention from historians; it was a branch of operative surgery which hardly existed before the nineteenth century. It may be that the frontier conditions existing in the American colonies actually encouraged the bold improvisations of its early exponents. Just before the end of the eighteenth century, William Baynham of Virginia operated successfully in two cases of extrauterine pregnancy. In 1816 John King of Edisto Island, South Carolina,

[54] For instance, detail in Gross' figures shows the following:

European surgeons	cases	recoveries	deaths
Robert Liston	115	99	16
Bransby Cooper	134	125	9
John Crichton	200	186	14
Claude Ponteau	120	117	3
American surgeons			
Benjamin Dudley	207	201	6
Valentine Mott	162	155	7
J. P. Mettauer	91	87	4

[55] S. D. Gross: "Surgery" in Clarke et al.: *op. cit.*, p. 191; F. H. Garrison: *op. cit.*, p. 493; Valentine Mott: *Travels in Europe and the East*, New York, 1842, pp. 38-42.

performed a similar operation, saving in the process both mother and child.[56]

Ephraim McDowell of Danville, Kentucky, has been regarded by most authorities as the true founder of operative gynecology. After a year of study under John Bell of Edinburgh he established himself in Kentucky and attained an excellent reputation as a lithotomist, though he had relatively few cases, compared to surgeons like Mott and Dudley.[57] His operation in 1809 for diseased ovary was successful, the patient, Mrs. Crawford, living more than thirty years after the ordeal.[58] His initial case was followed by twelve more, seven of which were successful. The acceptance by the surgical world of McDowell's claims gives him a very high position among pioneer surgeons, which was fittingly observed in the Ephraim McDowell program at Danville in 1949, by the American Association of the History of Medicine.[59]

Ovarian surgery was performed many times and successfully in the United States after McDowell's famous first case. Nathan Smith of Norwich, Vermont, had a successful case in 1821; the Atlee brothers of Pennsylvania, between them, performed hundreds of similar operations in the 1840's and later. By that time, of course, ovariotomy and many refinements and variations of this type of surgery had been thoroughly established by such surgeons as Auguste Nélaton in France, Charles Clay and Spencer Wells in England, and others. It is interesting to note, however, that the first important treatise on the subject, John Lizars' *Observations on Extraction of Diseased Ovaria,* published in 1825, seems to have been directly inspired by the author's study of McDowell's cases.[60]

The career and achievements of J. Marion Sims were extensive enough to give a distinctive character to American surgery; his standing on the continent of Europe during the 1860's probably had as much to do as any factor with the increased respect accorded to American practitioners.

[56] F. H. Garrison: *op. cit.*, pp. 507-08; M. E. Pickard and R. C. Buley: *The Midwest Pioneer. His Ills, Cures and Doctors,* New York, 1946, pp. 115-16.

[57] He had a perfect record in lithotomies, however, of recoveries in thirty-two cases. One of his patients was James K. Polk.

[58] E. McDowell: "Three Cases of Extirpation of Diseased Ovaria," *Eclectic Repertory and Analytic Review,* VII, pp. 242-44 (1817), describes the Crawford case and two others.

[59] See *Bull. Hist. Med.,* XXIV (Mar-Apr. 1950), esp. I. Abell: "The Professional Attainments of Ephraim McDowell," *ibid.,* pp. 161-67.

[60] F. H. Garrison: *op. cit.*, pp. 507-08. McDowell sent his original report of his early cases to his teacher John Bell. But Bell was away in Italy and never saw it; Lizars, a pupil of Bell at Edinburgh, received the contribution, and followed up the findings of McDowell with researches of his own.

Few individuals have endured so many misfortunes and disappointments as Sims, in trying to fit themselves into the field of medicine. Poverty, ill health, and family troubles dogged his steps as he went from town to town in the lower South, endeavoring to establish a lucrative practice. By the 1840's in Montgomery, Alabama, he began to gain a reputation as a competent surgeon; his early operations for club-foot, abscess of the liver, resection of the jaw and hare-lip, while not pioneer surgery, were performed in rural areas in which most facilities for successful surgery were lacking. His greatest achievement, the conquest of vesicovaginal fistula, was really the result of a number of improved surgical techniques, all necessary before success in this operation was possible. Experimentation in the posture of the patient, the devising of a new type of speculum to facilitate examinations, invention of a catheter to keep the bladder emptied, all were preliminary steps, as he found out from repeated failures to close the fistulas of his patients. Almost in despair, he tried silver wire instead of silk thread for his sutures and success was immediate; within a week all the cases which he had been treating in his small clinic were cured. Publication of these cases in 1852 made Sims famous.[61]

Even at the threshold of his great success, misfortune again interrupted his plans. Precarious health compelled him to leave his native South and seek a cooler climate. He arrived in New York ill and poverty-stricken, without friends, in 1853; then came his great idea for a special hospital and clinic for women, a plan pursued against great odds but with final success in the organization of the New York State Women's Hospital in 1855. In the years following, his reputation became world-wide; his visit to Europe in 1861 turned into a triumph of demonstrations and honors.[62]

The methods of Sims were continued by Thomas A. Emmet at the Women's Hospital and elsewhere in this country by Nathan Bozeman, Josiah Nott, Theodore G. Thomas, and Robert Battey. Since, however,

[61] H. E. Sigerist: *op. cit.*, pp. 105-09; Sims' description of these cases was published in *Amer. Jour. Med. Sci.*, NS, XXXIII (1852), pp. 59-82.

[62] An impression given by F. R. Packard (*History of Medicine in the United States*, II, p. 1140) and repeated by other historians, that Sims' project for a hospital was opposed by Mott, Delafield, Buck, and other leading medical men of New York seems very doubtful, in view of Sims' tribute to Mott and J. W. Francis for their aid in helping him, from the very beginning (H. T. Tuckermann, "Biographical Essay on John W. Francis," in appendix to J. F. Francis: *Old New York*, New York, 1858, p. cxxiii); the medical men of the town held a public meeting in honor of Sims on the first anniversary of the hospital (*Frank Leslie's Illus. Newspapers*, Feb. 23, 1856, p. 174); on his visit to Europe in 1861, he carried with him letters of introduction from these same doctors.

the work of the latter individuals was in a later period, corresponding to wide development of uterine and vaginal surgery, it can never be regarded as possessing the historical importance of Sims' pioneer achievements in operative technique and his establishment of what was the leading center of gynecological activity of its time.[63]

Philip Syng Physick is credited with the first operation in this country for hydrocephalus by puncture of the head (1801) and Dudley appears to have been the first American surgeon to trephine the skull for the cure of epilepsy. Plastic surgery began to be important in the 1840's in the pioneer work of Gurdon Buck, Joseph Pancoast, John Watson, and F. H. Hamilton. In 1844 Watson closed, by a plastic operation, a large opening in the forehead of a patient which had resulted from a syphi'itic ulcer. Mott, Pancoast, Hamilton, Buck, and others did some pioneer operations for the restoration of lips and cheeks.[64]

One such operation performed by Mott was upon a young farmer who suffered from inflammation of the jaw caused by the unskillful extraction of several teeth. A slough formed on the side of the man's face, with a large chasm extending from the angle of the mouth back toward the left ear. Due to further "dental surgery," the rough edges of the opening had turned in and adhered to the gums. In this state he came into Mott's hands. It was necessary to remove the alveolar process of the left side of the lower jaw, for it was found to be "denuded and carious." To hide the chasm in the cheek, the surgeon decided to turn up a portion of the integuments of the neck, and after trimming the edges of the opening in the cheek and separating them from the gums, he made three incisions in the neck to form a four-sided flap. With this he filled the chasm in the cheek, drawing the edges together with interrupted sutures. The operation was successful, after some trouble at the mouth angle where the sutures continued to ulcerate through. When at length they held and the wound healed, the symmetry of the face was restored and the neck wound healed perfectly. The man's mouth was a bit smaller than before, that was all. This was in 1832.[65]

Aside from a needle knife designed by Dr. Isaac Hays of Philadelphia for use in cataract operations and some rather skillful work by Dr. Henry W. Williams of Boston for the same ailment, little progress seems to have

[63] F. H. Garrison: *op. cit.*, pp. 509-12.
[64] S. D. Gross: "Surgery" in Clarke at al., *op. cit.*, pp. 180, 201-02.
[65] E. H. Pool and F. J. McGowan: *op. cit.*, Case 105, pp. 42 ff.

been made over here in the surgery of the eye prior to the Civil War. The same can be said of aural surgery. Valentine Mott found, in a visit to Jaeger's great hospital and clinic in Vienna in the late 1830's, extensive progress in ophthalmic surgery. He also discovered that F. A. von Ammon and his colleagues in Dresden were doing extensive work in reshaping noses, lips, ears, eyelids, palates, and other deformed or injured parts. In Berlin he was greatly impressed with the new rhinoplastic operations of J. F. Dieffenbach, and in Paris the orthopaedic achievements of Guérin and his associates amazed Mott so much that after returning again and again to Guérin's clinics for three years, he began plans to establish such an institution in New York upon his return there. There is little doubt that in these advanced techniques of surgery, the United States still lagged behind Europe.[66]

Americans had an important share in the development of ether and chloroform as agents in the progress towards painless surgery. The story of the introduction of ether, so far as its American use is concerned, is well-known. While Michael Faraday had noted the anaesthetic properties of sulphuric ether as early as 1818, it was apparently never employed surgically in this country until 1842, when Dr. Crawford Long used it in a minor case. Since Long did not publish his results at the time of his case, his discovery did not receive due recognition. The well-authenticated use of ether at the Massachusetts General Hospital on October 16, 1846, received wide attention and Dr. John Collins Warren, the operator, received a large share of credit for daring to use the preparation. The unfortunate controversy between William T. G. Morton and his erstwhile friend, Charles T. Jackson, the chemist, marred but did not affect the importance of the discovery. The success of ether as an anaesthetic agent, which it shared with chloroform, is too well-known to be narrated here.

Before the exact nature of Morton's compound was known abroad, Robert Liston used ether in an amputation case (December 1846); Syme of Edinburgh and Pirogoff of Russia soon added it to their surgical pharmacopeias. Sir James Y. Simpson tried ether in cases as early as January, 1847, but soon discarded it for chloroform.[67] It is probably true

[66] S. D. Gross: *op. cit.*, pp. 203-05; Valentine Mott: *Travels*, etc., pp. 54-57, 63-76.

[67] A. Castiglioni: *op. cit.*, pp. 723-24; H. E. Sigerist: *op. cit.*, pp. 115-17; F. H. Garrison: *op. cit.*, pp. 505-06; Frances L. Taylor: *Crawford Long*, New York, 1928, pp. 43 ff, 96-97, 103; J. Marion Sims described Long's experiments in the *Virginia Medical Monthly* for May, 1877; H. J. Bigelow, an eye-witness of Warren's operation, reported it in the *Boston Med. and Surg. Jour.*, XXXV (1846-47), pp. 309, 379.

that the American use of ether by Morton and Warren led to its use in Europe, although Morton did not announce the nature of his compound until 1847, endeavoring for some time to patent it as "Dr. Morton's Letheon." [68]

The American share in the discovery of chloroform has not been so frequently mentioned. Although Justus Liebig of Darmstadt and Eugene Soubeiran of Paris both discovered the preparation independently of each other in 1831 and published their results (Soubeiran in 1831, Liebig in 1832), an American doctor, Samuel Guthrie, independently of either of them, hit upon a method of preparing it by distilling alcohol with chlorinated lime, at his laboratory near Sackett's Harbor, New York. Guthrie wrote Benjamin Silliman of Yale about his discovery and the latter duly noted it in his *American Journal of Science* in January, 1832, and printed Guthrie's letter about it. Guthrie made no effort, however, to introduce it into surgery and it was probably Sir James Simpson who first did so. Having received knighthood and a baronetcy from Queen Victoria for having recommended the preparation on two occasions of royal childbirth,[69] Simpson listened complacently as the Lord Provost of Edinburgh, while tendering him freedom of the City for his medical achievements, named him the "discoverer" of anaesthesia.[70]

Of these two triumphs, there is little doubt that the work of Morton, Jackson, Long, and Warren in the introduction of ether anaesthesia into American surgical practice was of far greater significance than the almost unnoticed preparation of chloroform by Guthrie. The fact often neglected by historians is that ether was used almost simultaneously in widely-separated surgical areas. While the demonstration by Warren was a little earlier, for ether, than any known uses in Europe, it is not necessarily true that Warren inspired the others. (Though it has usually been assumed by American historians of medicine). To American surgery, at least, it was of paramount importance. The operative practice in the Massachusetts General Hospital increased three-fold soon after Warren's historic case. Dr. R. D. Mussey of the Ohio Medical College announced in 1848 his use in many cases of both chloroform and ether, with a preference for

[68] In January, 1847 a lively discussion occured in the newly-organized Academy of Medicine in New York about the propriety of the use of secret drugs such as Morton's "Letheon" (Philip Van Ingen, *The New York Academy of Medicine. Its First Hundred Years.* New York, 1949, p. 10).

[69] At the birth of Prince Leopold in 1853, and of Princess Beatrice in 1857.

[70] Victor Robinson: *Victory Over Pain,* New York, 1946, pp. 183-85; 191-208, 226; F. H. Garrison. *op. cit.*, p. 472, note 2.

the former. In 1852 he reported in the *Ohio Medical and Surgical Journal* the use of the two anaesthetic preparations in more than six hundred cases without a single fatality.[71]

It was a coincidence that initial efforts were made, in the same decade as the American demonstration of ether anaesthesia, in the direction of antiseptic surgery. Oliver Wendell Holmes precipitated a violent controversy in 1843 when he read to the Boston Society for Medical Improvement a paper on " The Contagiousness of Puerperal Fever." Holmes' conclusions were not widely accepted, any more than were those of I. P. Semmelweis of Vienna four years later, but eventual developments in antiseptic surgery proved both men to have been correct.[72]

Of unquestioned importance in the development of an American profession of surgery was the tragic experience of the War of 1861-1865. The very size of the struggle, ranking in that particular with the great conflicts of modern times, dictated its significance. Fortunately for posterity, the medical authorities realized this and published a large part of the record in their *Medical and Surgical History of the War of the Rebellion*,[73] of which the second portion is devoted to the surgical side of the picture.

It is quite beyond the scope of this paper to describe in any detail the total medical or surgical results of a conflict of such magnitude. Chief among the achievements of the Medical Department of the United States Army was the mobilization of a force of 12,343 medical officers in the four years of warfare, the setting up of 204 general hospitals, and the systematic evacuation of the wounded after large-scale battles. Dr. Jonathan Letterman, Medical Director of the Army of the Potomac, devised and set in operation the evacuation plan after the Battle of Antietam, with the encouragement and support of Surgeon-General Hammond. This system, which included the establishing of field hospitals near the battle area, and the quick removal of the permanently incapacitated to the general hospitals in the rear, worked well in the large-scale battles of 1862, and was made later the standard method of handling the wounded for the United States

[71] James G. Mumford: *Surgical Memoirs and Other Essays*, New York, 1908, pp. 83-84; M. E. Pickard and R. C. Buley: *op. cit.*, pp. 114-15.

[72] H. E. Sigerist: *op. cit.*, pp. 111-15.

[73] United States, Surgeon-General's Office, *Medical and Surgical History of the War of the Rebellion*, Parts 1, 2 and 3, II (of each part): Surgical History. Washington, 1870-88.

Army. Letterman also organized a standard ambulance organization for the corps and divisions of the Army.[74]

Some idea of the size of the Medical Director's task may be gained when we realize that his records for the Battle of Antietam included 8,350 wounded, which he admits was an incomplete number. While they were receiving medical and surgical treatment, the wounded were placed in camps in Frederick, Maryland, a hospital center which contained 5,000 patients, sixty-two surgeons, over 500 nurses, plus medical cadets and hospital stewards, at the end of October, 1862.

Letterman stated that in his opinion the surgery of 1862-63 was too conservative, that there was too little operative work. Yet his huge temporary field hospitals were highly commended by General Hammond, General Muir, of the Medical Service of the British Army, and by visiting delegations from Congress. Between Antietam, in September, 1862, and Fredericksburg, in December of the same year, Letterman improved his organization. Medical supplies were furnished on a one-month instead of a three-month basis, and by brigades instead of by regiments; the medical supply tables were enlarged to meet the needs of experience; on October 30, 1862, he provided for the setting up of a field hospital in each corps for each division; in each of these field hospitals three surgeons and three assistants were designated to perform operations; three other surgeons were charged with administering the hospital, providing food and supplies, and keeping the medical and surgical records, respectively.

At Fredericksburg, which was fought so soon after the new medical plans were instituted, the wounded and the injured were cared for quickly and effectively. It was a ghastly task which confronted his medical and surgical staff; on the Union side six corps of 254 regiments and 109,452 men were engaged; the casualties suffered were 9,060 wounded, 1,339 killed in action, and 1,530 missing, a total of nearly 12,000. In his report of the battle, Letterman noted that 503 operations were performed, of which the major part were amputations; in all the serious operations, of which there were 498, chloroform was used. Only two types of operation were classified in the report: amputations and resections; all others were lumped together. For example:

[74] P. M. Ashburn: *op. cit.*, pp. 76-79. Colonel Ashburn suggests, in a note on page 79 that Letterman's plan of an ambulance corps was probably suggested by Larrey's *légion des ambulances volantes*, which had been attached to Napoleon's *Garde Impériale*.

	II Corps
Amputations	113
Resections	6
Other	3
Total	122

After Fredericksburg, Letterman was not allowed to continue his system of temporary field hospitals, which had worked so well after Antietam. Instead, he was ordered to send all the wounded directly to the general hospitals in Washington, an operation which consumed ten days time, and which was certainly an unwarranted hazard to the dangerously wounded. Yet this drastic order must have been countermanded, for Letterman states that after Gettysburg, an even larger battle than any preceding, the XII Corps surgeons removed all their wounded from the field in six hours and performed every major operation necessary within twenty-four hours time. Thus field hospitals must have existed for emergency surgery purposes, at least.[75]

In the Confederate forces, all the problems which vexed the Union Army doctors were present and were of course accentuated by the lack of drugs and medical supplies, including surgical instruments. Yet the Confederacy planned for a large medical department of 1,000 surgeons, 2,000 assistant surgeons, plus an indeterminate number of acting or " contract " surgeons, as occasion required. Surgeon-General Moore actually did secure 834 surgeons, 1668 assistant surgeons, and nearly one hundred surgeons for the Confederate Navy.[76]

The medical and surgical effort of the Confederacy was probably more noteworthy than that of the Union, when we take into account the deficiencies of the Southern military forces, which fell with special weight upon the Surgeon-General and his hardworking staff. General Moore was a dynamo of energy and inspired his surgical assistants with almost equal zeal. Substitutes were sought for the scarce medical drugs and medicines; seven laboratories were set up in the South for their manufacture; native opium was cultivated and used in Confederate hospitals; four of the Surgeon-General's medical distilleries were still operating in

[75] Jonathan Letterman: *Medical Recollections of the Army of the Potomac,* New York, 1866, pp. 24-31, 40, 44-46, 49-51, 53-55, 67, 79-87.

[76] United States, War Department, *Official Records of the Union and Confederate Armies,* Wash., 1880-91; Series IV, I, p. 1176; Confederate States, *Statutes at Large, Prov. Cong.,* Richmond, 1864, p. 38; Wyndham B. Blanton, *Medicine in Virginia in the Nineteenth Century,* Richmond, 1933, p. 272.

1865. Moore founded a Confederate Association of Army and Navy Surgeons and published the *Confederate States Medical and Surgical Journal.* Instruments were smuggled through the Union blockade and medicines were "imported" through the lines.[77]

A very impressive achievement of the Confederate medical authorities was the establishment of an excellent system of general hospitals in Richmond and other centers. The largest of these was called "Chimborazo" and was situated on a hill of the same name near Richmond. It consisted of 150 well-ventilated single-story buildings, each 100 by 30 feet in size, organized in five divisions, to care for the separate needs of the troops from Virginia, Georgia, Alabama, and the Carolinas; each division had thirty wards, and each ward from forty to sixty beds. There were a good water supply and sewage system, five ice houses, a "Russian" bath house, a brewery and a bakery. A nearby farm was placed at the disposal of Director McCaw for a supply of milk and fresh eggs. A trading boat plied the James River and the Kanawha Canal between Richmond, Lynchburg, and Lexington to trade shoes, cotton, and yarn for hospital supplies. Attached to Chimborazo Hospital were about fifty surgeons, thirty guards, a matron with forty-five nurses, and two apothecaries. In continuous operation for three and-a-half years, this was the largest military hospital of any during the War, on either side. Moreover, it was the largest ever organized anywhere, to that time. Here nearly 77,000 troops were hospitalized and of these, some 70,000 were returned to the fighting front or to their homes.[78]

Of the Confederate soldiers wounded in battle, some nineteen per cent were struck in the chest or abdomen. Chest wounds were considered very serious and those of the abdomen as generally fatal from hemorrhage or infection. Before medical aid could be rendered for such wounds, surgery was resorted to for the removal of bone splinters or the adjustment of depressed ribs. Sometimes ligation of the arteries was performed, followed by doses of opium and periods of rest. About twelve per cent of the wounds were of the head, face, and neck. In head wounds where the skull was depressed, trephining was resorted to. The great majority of the wounds, about sixty-five per cent, were of the extremities. They

[77] *O. R.* Series IV, I, pp. 209-10, 212; *ibid.*, II, pp. 971, 1072-73; *ibid.*, Series I, XXVII, Part 2, p. 749; S. P. Moore: "Resources of the Confederacy in February 1865," *So. Hist. Soc. Papers*, II, pp. 126-28; F. P. Porcher: *Resources of Southern Fields and Forests*, Charleston, 1862, passim; W. B. Blanton: *op. cit.*, p. 273.

[78] W. B. Blanton: *op. cit.*, pp. 301-02; E. R. Wiese: "Samuel Preston Moore," *So. Med. Jour.*, XXIII (Oct. 1930), p. 920.

were, of course, bandaged on the field, and often tied in splints; the surgeon might even do a quick ligation on the spot, or bind the wound with a tourniquet. At the hospital the wound was more carefully examined, foreign bodies probed for and removed, splints readjusted, and fresh dressings applied. Against hemorrhage, doses of laudanum were given periodically. Amputations were performed frequently, in the belief that otherwise, gunshot wounds of the femur and penetrating wounds of the joints would be fatal.

Mortality from wounds was very high in the Confederate Army, even of wounds of the extremities; in one campaign near Richmond in 1862, deaths from such wounds varied from thirteen per cent in wounds of the forearm to sixty per cent in thigh wounds with compound fractures. It is said that the only resection of the knee joint in either Army was performed by Dr. J. B. Reed of Georgia, a Confederate surgeon. Anaesthetics were used in serious cases whenever they could be obtained. Chloroform was preferred by Confederate surgeons, though there was some disagreement as to the relative merits of that compound as compared to ether. Doctor Hunter McGuire, Chief Surgeon of Stonewall Jackson's command, is said to have used chloroform 28,000 times without a single fatality.[79]

Deaths on both sides of the War were very high, but no one knows exactly how high. Such figures as exist give us total fatalities of nearly 600,000 for the Union and Confederate Armies together, but it is probable that these figures are far from complete. Colonel Livermore has estimated that the North lost, from battle wounds, 110,070 men, while 224,586 died from disease. For the Confederacy he gives, for the above two categories, 94,000 and 164,000.[80] From such figures, if they were completely accurate, we would deduce a more than two-to-one ratio of death from disease as compared to battle deaths, for the Union Army, with the Confederacy showing a lower ratio, of about five to three.

Since the South lost the War, and in the process a large proportion of its official records, especially in the fire which almost destroyed Richmond in the final campaign of 1865, its side of the story has not been fully printed. Some Confederate officers contributed to the official United

[79] W. B. Blanton: *op. cit.*, pp. 285-86, 288; D. J. Roberts: "Field and Temporary Hospitals," F. T. Miller, ed.: *Photographic History of the Civil War*, New York, 1912, VII, p. 262; E. R. Wiese: *op. cit.*, p. 920.

[80] T. L. Livermore: *Numbers and losses during the American Civil War*, Boston, 1900, pp. 1, 7-9, 22, 39-40, 48 50-63; R. H. McKim: *Numerical Strength of the Southern Army*, New York, 1912, places the numbers at 74,508 battle deaths and 125,716 other deaths, a total of 200,224 for the Confederate Army.

States records after the War;[81] a number wrote medical and surgical memoirs.[82] Much of value has still remained unpublished.

Thus the Civil War was perhaps the greatest single influence in the development of American surgery since the founding of the Republic. Hundreds of the most difficult kinds of surgical cases were handled, in a space of time which would have taken many years of peace to match in number or in importance, by the thousands of medical and surgical personnel who served the massive armies of North and South. The experience was not forgotten, but noted down carefuly, in the case of the Union Army, and as well as circumstances allowed, probably, in the case of the South. Furthermore the tragic events were made to serve future generations of doctors and patients, by the building up of a great library, and the linking to that institution of a splendid medical museum and military medical school.[83]

V

It is possible, even from so brief a survey of early American surgery, to draw several conclusions regarding the status of the art in the pre-Listerian period. While it is quite true that surgery in this country lagged behind that of many centers of Europe in the 1830's and 1840's, it seems equally true that in a large proportion of the various types of operations, American practice approached European standards. In vascular surgery, in bone and joint operations, in lithotomy and gynecology, the American surgeons seem to have displayed a competence and a success quite com-

[81] Dr. Joseph Jones, a Confederate surgeon, contributed a valuable report on hospital gangrene to the United States Sanitary Commission, *Surgical Memoirs,* II, pp. 145-70.

[82] As, for example, Joseph Jones. *Medical and Surgical Memoirs,* New York, 1890; Edward Warren: *An Epitome of Practical Surgery,* Richmond, 1863; *ibid., A Doctor's Experiences in Three Continents,* Baltimore, 1885; John J. Chisholm and Samuel P. Moore published *Manuals of Military Surgery* (Richmond, 1861 and 1862, respectively); Hunter McGuire described an important case in his "Wounding and Death of General Jackson" in the *Richmond Medical Journal* for May, 1866; aside from these and a number of diaries and autobiographies, the medical literature of the Confederacy, in print, is not large. The author of this paper has summarized the principal features in his "Caring for the Confederate Soldier," *Medical Life,* XLII, No. 9 (Sept. 1935), pp. 443-508.

[83] Distinguished contributions to the *Medical and Surgical History* were made by Doctors Weir Mitchell, G. R. Morehouse, and W. W. Keen on the effects of wounds upon the nervous system; on the "irritable" heart of soldiers by Dr. J. C. Da Costa; on dysentery by Dr. A. A. Woodhull; and on the ambulance service by Dr. Jonathan Letterman. The great pathologist Rudolph Virchow commended the *History* as an outstanding work of medicine, remarking that the Americans seemed to make better use of their experience than others had. (United States Surgeon General, *Medical Department of the United States Army in World War I,* Washington, 1921-29, I, p. 16).

parable to surgery in the Old World. It is also true that in the achievements of McDowell and Sims in gynecology, in the contributions of Morton, Long, and Warren to painless surgery, and in the outstanding record of Mott, Physick, and Dudley in getting their patients well, examples were provided which were difficult for any European surgeons to equal, for their time.

In other words, as the middle of the century approached, surgery was being practiced with about as much success on one side of the Atlantic as on the other. While there were centers of surgical activity, as for example, an orthopoedic group in Paris and rhinoplastic groups in Germany, which had no counterparts in America, this is merely another way of saying that always, in the sciences, the most advanced ideas are constantly being formulated in various places. The locales of advanced research were still in the Old World, in the older, established university and hospital centers. But such a condition did not prevent surgery of a professional calibre being practiced in America. The final stage of development—the existence of a completely independent, well-supported and adequately supplied group of research institutions—was a matter for the future to unfold.

Even European medicine and surgery lagged in many directions in the mid-nineteenth century. The uproar occasioned by the ideas of Oliver Wendell Holmes in the United States of the early 1840's was matched and even exceeded by the brutal treatment given to the innovator Semmelweis four years later. The apparent tendency of many European surgeons to measure their scientific status by the number of operations they had performed, regardless of what happened to the patients afterward, was shocking to many an otherwise respectful American visitor.[84] Surgery was still "septic" in Europe, just as it was in the United States. It is likely that a suffering patient of 1850, needing an operation, would have fared as well whether operated upon by Benjamin Dudley or Bransby Cooper, by John C. Warren or Auguste Nélaton, by Valentine Mott or Benjamin Brodie. The fact that newer methods were perhaps more common in Europe, that research projects in surgery were further advanced in Vienna or Paris than in New York or Philadelphia, did not prevent excellent operators from emerging from the American schools.

The swift progress of American surgery in the first half of the nineteenth century was marked by the appearance of a very respectable amount of

[84] A fact noted especially by Valentine Mott after a long residence in Europe during 1836-41: *Travels in Europe and the East*, pp. 38-42.

surgical literature. Caspar Wistar published his *System of Anatomy* in 1811-14; John Syng Dorsey issued his *Elements of Surgery* in 1813 (a second edition appeared in 1818 and a third in 1823); in 1847 an American translation of Alfred A. L. M. Velpeau's *Nouveaux éléments de médecine opératoire,* probably the most complete work on surgery in print, appeared under the sponsorship of Valentine Mott, followed by a second and more complete edition in 1856. Joseph Pancoast published a *Treatise on Operative Surgery,* which ran through three editions during 1844 to 1852. Samuel D. Gross wrote a comprehensive treatise on pathological anatomy in 1839; he also produced important works upon the diseases and injuries of the urinary bladder, and upon the diseases and injuries of the bones and joints. His greatest work, however, was his monumental *System of Surgery, Pathological, Diagnostic, Therapeutic and Operative,* which appeared in 1859 and was issued in many later editions (6th edition, 1882). In common with many medical men, he produced a *Manual of Military Surgery* for the use of Army doctors in the Civil War. John M. Carnochan, Paul F. Eve, James R. Wood, and many other surgeons of the early days collected records of cases which they had handled or with which they were familiar. The early American medical journals carried a notable group of cases reports of operations by Physick, Mott, Dudley, Warren, and the other leaders of the profession; the most notable of these journals and the favored medium for surgical reports was the *American Journal of Medical Sciences,* founded in Philadephia (under a slightly different name) by Nathaniel Chapman in 1820.[85]

With the accomplishment of a large amount of successful surgery, including the devising of a fair number of original techniques and the production of valuable case histories and textbook literature, it can be said that the professional level of American surgery was attained by about the middle of the nineteenth century. Even though such a conclusion may be considered arguable, it seems hardly possible to deny American surgery such a position at the end of the Civil War, following the monumental medical and surgical effort of both the South and the North. The extensive recording of this experience in the years just after the War, and

[85] J. S. Billings: *op. cit.,* pp. 109, 139-41; W. D. Postell: *op. cit.,* p. 99; J. M. Carnochan: *Contributions to Operative Surgery and Surgical Pathology,* Phila., 1858; Paul F. Eve: *Collection of Remarkable Cases in Surgery,* Phila., 1857; James R. Wood: *Early History of the Operation of Ligature of the Primitive Carotid Artery* (with reports of forty-eight cases and a summary of forty-four other cases), New York, 1857; E. B. Krumbhaar: "The Early Days of the American Journal of the Medical Sciences," *Med. Life,* XXXVI, No. 11 (Nov. 1929), pp. 587-606.

the development of institutions of the standing of the Army Medical Library and its Museum signalize the positive establishment of American medical science in all its branches.

John Shaw Billings summarized the situation fairly:

> The most important improvements in practical medicine made in the United States have been chiefly in surgery, in its various branches. We have led the way in the ligation of some of the larger arteries, in the removal of abdominal tumors, in the treatment of diseases and injuries peculiar to women, in the treatment of spinal affections and of deformities of various kinds. Above all, we were the first to show the uses of anaesthetics—the most important advance in medicine made during the century. In our late war we taught Europe how to build, organize and manage military hospitals, and we formed the best museum in existence illustrating modern military medicine and surgery. Our contributions to medical literature have been many and valuable, and our government possesses the largest and best working medical library in the world.[86]

[86] J. S. Billings: "American Inventions and Discoveries in Medicine, Surgery and Practical Sanitation," Smithsonian Inst., *Annual Report, Bd. of Regents* (to July 1892), Washington, 1893, p. 618.

THE HISTORY OF GOITER IN THE PHILIPPINE ISLANDS

ISIDOR GREENWALD*

At the present time, goiter is common in nearly all parts of the Philippine Islands (1). Indeed, more than twenty years ago, Miller (2) wrote: "In the Philippine Islands, we have a definite goiter belt. The disease seems to be almost as prevalent there as in Switzerland."

This widespread occurrence in a group of islands in which there is very little land that is as much as fifty miles from the ocean is rather interesting. The situation becomes even more curious when it is found that the goiter is, or was recently, common among tribes living on, or close to, the sea (3, 4) and that the chief goiter district is in the central valley of Luzon (5) not more than 500 feet above sea-level, only about forty miles from the shores of Manila Bay and little more than half that distance from the Pacific Ocean. It seemed that an investigation of the history of goiter in the Philippines might be rewarding.

Ever since the islands were discovered by the western world in 1517, their inhabitants have been of interest to explorers, missionaries, scientists, and travellers of all descriptions. Many of them made records of their observations. These reports, down to 1897, as well as a much greater volume of material relating to the description, the history, and commerce of the islands have been collected in fifty-five volumes by Blair and Roberston (6). These authors included only extracts from those books that were comparatively readily available, but they printed in full a great deal of material from previously unpublished manuscripts preserved in various archives in Spain. Their work included two volumes of bibliographies and two of indices. The latter contain no mention of goiter.

I have examined all of the material in the fifty-one volumes that seemed to contain descriptions of the physique or diseases of the natives—and there are many such—without finding any mention of goiter. I have also examined the pertinent original accounts from which Blair and Roberston made their selections as well as several others that were not noted by them. Amongst those who might have been expected to mention so striking a phenomenon as endemic goiter, if existent, are: De la Concepcion (7), Martinez de Zuñiga (8), de Comyn (9), Codorniu (10), Mallat (11), Jagor (12), Semper (13), Taulier (14), Cavada (15),

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Gonzalez Fernandez (16), Moya (17), Meyer (18), Maso-Bru (19), Schadenberg (20), Malumbres, Jimeno and Zubieta (21), Planter (22), Barcones (23), Villaverde (24), Perez (25), and the several authors whose reports concerning the natives of Northern Luzon over the period 1700 to 1890 were published by Perez (26).

None of the material published in full by Blair and Roberston is included in this list. Reference to the bibliography given at the end of this paper will show that several of the authors listed above were physicians and that their reports deal with the diseases encountered in the island and with their treatment. Nevertheless, there are few references to goiter.

The earliest mention that I have found relates to its presence in the province of Batangas at the end of the eighteenth century (8). This province is on the island of Luzon, none of it is more than twenty miles from the ocean and very little is more than 500 feet above sea-level. It is noteworthy that this appears to be the *only* occurrence of endemic goiter known to Martinez de Zuñiga (8): "el crecer una papada deforme en la garganta es peculiar de esta provinca" (Vol. 1, p. 158).

There is no other mention of goiter or anything resembling it for fifty years. In 1845, Mallat (11) wrote, of the province of Tayabas: "Ce pays est, en général, très bas et très humide . . . y sont presque constamment saturés d' humidité; il en résulte beaucoup de maladies, surtout des diarrhées opiniâtres, des fièvres intermittentes et la maladie connue sous le nom de *paperas*; les plus grandes précautions sont necessaires pour se préserver de ces incommodités" (p. 267).

Mühry (27) translated "paperas" as "Kropf" but the context seems to indicate that mumps was meant. In fact, more recently, that seems to have been its only meaning (28). (See also (29) for a discussion of this question). In any event, it is noteworthy that Mallat, although describing each province in detail, made no mention of the occurrence of "paperas" elsewhere.

Another half-century elapsed before goiter was mentioned again and then it was not simple goiter but exophthalmic goiter. In connection with his discussion of cardio-vascular diseases, Barcones (23) mentioned "bocio exoftalmico" and went on: "Es propria esta enfermedad en este pais de las *razas negras*, y en particular de la mujer, dismenorreica e histerica" (p. 118).

In another place (p. 432), Barcones wrote that the "negras" had come with the Arabs but by 1895 had retired to the island of Negros and to the mountains of Marivales (the southern part of the peninsula of Bataan). (Actually, the negritos are much more widespread.)

Following the occupation of the islands by the United States, there were soon several reports of endemic goiter. The first was that by Jenks (30) of its occurrence among the Bontoc Igorots in the highlands of northern Luzon. The Igorots had previously been studied by several other anthropologists and ethnologists, notably by Malumbres, Jimeno, and Zubieta (21), by Meyer (18), by Perez (25) and by Schadenberg (20). In 1889, Schadenberg published a list of 1100 words in Bontoc and three other Igorot dialects but did not include one for goiter. In 1905, in a list of 795 words, Jenks included two words for goiter.

In the same year, Duncan (3) reported on the occurrence of goiter in a tribe living on the marshy northern shores of Manila Bay.

A few years later, 1909, a word-list from the Subanuns, living at the mouth of the Sindangan River on Mindanao, included a word for goiter (4). In the same year, Reed (31) reported goiter among the negritos of the Bataan peninsula and the provinces to the north of it (Zambales, Pampanga and Tarlac).

In a medical survey of the town of Taytay, near Manila, in 1909, a special search was made for goiter (32). Eleven cases, all in women, were found in a total population of about 6000. The average duration at that time was 15 years and one goiter was said to be more than thirty years old, thus indicating the presence of goiter as far back as 1879. There is no statement as to whether or not this woman had been living in Taytay, or elsewhere, at that time.

In this town, fish was the second most commonly used food. This was mostly fresh-water fish, but dried fish from Manila was "always to be found in the market or in the tiendas in greater or less abundance" (33).

In 1914, Calderon (34) published a paper on the medical geography of the Philippines. He had attempted to secure information regarding the distribution of diseases from the physicians practicing throughout the islands. Ninety-five replied to his questionnaire but only one reported goiter. This was from Tayabas. It is particularly noteworthy that there was no mention of goiter in Nueva Ecija. This province is in the central valley of Luzon, is easy of access and was visited, at earlier periods, by Martinez (8), Semper (13), Cavada (15), and others. All of those named devoted considerable space in their reports to the diseases of the inhabitants, but none mentioned goiter. The first reference to the presence of goiter there that I have found is in the report of the Commissioner of Health for 1911-12 (35), which states that 43 cases were found at Penaranda, in a population of 8,410.

The province has since become notorious for the prevalence of goiter (1, 5, 36, 37).

Recio (1) questioned his patients regarding the frequency of goiter in their home towns. Among the *coastal towns* in which goiter was said to be prevalent were Pilar in Bataan and Malabon in Rizal.

Recio also noted that 459 cases of goiter were seen in the Philippine General Hospital in the two and one-half years following liberation, whereas only 345 were seen in the 15 years from 1909-1924. Erickson (38) had made a similar observation in 1938. Recio commented (p. 323): "Such occurrences are usually attributed to the lack of surgical, or even medical, consciousness (at the earlier period I. G.). But that could probably only partially account for the phenomenon. Even then the operative mortality was not high (4.3 per cent compared to 1.5 per cent in the present series); besides more patients consulted for a mass in the neck, (77 per cent as compared to the present 69 per cent), and the patients came from places just as remote. One wonders of course whether the present tempo of life has any influence on the incidence of the disease."

Whatever the cause of goiter may be, it seems that the rapid increase in its incidence within recent years as well as its endemicity in coastal towns and villages is quite inconsistent with the "iodine-lack" hypothesis.

In this respect, the history of goiter in the Philippines resembles its history in the Americas, in New Zealand and in England (29, 39, 40), in Africa (41), and in other places (42).

Summary

The history of goiter in the Philippines has been reviewed. None of the early explorers or missionaries reported its presence. The first report is to its occurrence in but one province at the end of the eighteenth century, two hundred years after the conquest. Thereafter, there are isolated reports at long intervals. Since the American occupation, the disease has become much more frequent, being for twenty-five years highly endemic in a region in which it seems to have been unknown a half-century earlier. It is, or was, prevalent among peoples living at, or near, the sea.

These observations are believed to be inconsistent with the hypothesis that endemic goiter is due to a lack of iodine.

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CENTENARY ANNIVERSARY OF THE OLDEST MEDICAL COLLEGE HOSPITAL IN THE UNITED STATES— ST. FRANCIS HOSPITAL, COLUMBUS, OHIO

LINDEN F. EDWARDS

The year 1951 marks the one-hundredth anniversary of the oldest jointly owned medical college building and hospital in continuous operation in the United States, namely, St. Francis Hospital, 311 East State Street, Columbus, Ohio. This edifice was constructed in 1851 by, and was under the exclusive control of, the Board of Trustees of an institution originally chartered under the name of Starling Medical College, so named in honor of its principal benefactor, Mr. Lyne Starling of Columbus, who contributed thirty-five thousand dollars toward its establishment.

Data supporting the claim that Starling Medical College was the first medical college in America to erect and control its own hospital for clinical instruction were obtained from such sources as the official records of its Board of Trustees and Faculty, its annual announcements or catalogues, newspaper notices, and statements of authoritative individuals. Included among the latter are the writings of Dr. Starling Loving who at the time of his death in 1911 at the age of 84 was the sole surviving member of the second graduating class (1849) of the College, and who served as a distinguished faculty member for 53 years, during 25 of which he held the deanship.[1]

On Janury 14, 1847, the General Assembly of the State of Ohio amended the Act (passed March 3, 1834) to Incorporate the Willoughby University of Lake Erie,[2] as a result of which the trustees of that institution were authorized to transfer its Medical Department from Willoughby, Ohio, to Columbus and "that said department be known and designated by the title of The Willoughby Medical College at Columbus, and be under the exclusive control of the trustees hereinbefore provided for." Section 2 of the amendment listed the names of 12 individuals, all of whom were residents of Columbus or the vicinity, who were to act as trustees.[3]

[1] S. S. Wilcox, "Doctor Starling Loving," *Old Northwest Genealogical Quarterly*, 14, 1911, 129-132.

[2] Laws of Ohio, 32 (1834), 376.

[3] Laws of Ohio, 45 (1847), 7.

The new Board of Trustees met in Columbus on February 15, 1847, and after electing its officers, on motion declared all chairs in the Willoughby Medical College at Columbus vacant. The board then proceeded to fill the vacant chairs by new appointments, included among which were three of the eight members of the faculty at Willoughby. The newly-appointed faculty consisted of the following: Henry H. Childs, M. D., Professor of Obstetrics and Diseases of Women and Children; John Butterfield, M. D., Professor of the Practice of Medicine and Pathology; Richard L. Howard, M. D., Professor of Surgery; Jesse P. Judkins, M. D., Professor of Anatomy and Physiology; Samuel N. Smith, M. D., Professor of Medical Jurisprudence and Insanity; T. R. Spencer, M. D., Professor of Materia Medica and Therapeutics; and Frederick Merrick, A. M., Professor of Chemistry.[4]

The first course of lectures in Columbus began on March 11, 1847, in a room over a bookstore, most of the students having transferred from Willoughby.[5] According to the Catalogue and Annual Announcement of the College published in May 1847, a preliminary course of lectures was given in October and the regular annual session of lectures began on November 3, 1847. In order to provide suitable accommodations for the anticipated one hundred and fifty students, the trustees purchased a large frame building, known as the Clay Club House, so called because it had been erected by the Whigs during the presidential campaign of Henry Clay in 1844. Following its removal to a new site it was remodeled into an amphitheater of sufficient size to seat one hundred and fifty students and a room for anatomical purposes. Since two lectures often were scheduled at the same hour additional class-room accommodations were obtained in the basement of an adjoining church edifice.[6] We are told that the session of 1847-1848 was a prosperous one for the reorganized Willoughby Medical College, one hundred and sixty students being in attendance.[7]

In spite of its auspicious beginning this institution survived less than one complete session. Paradoxically the cause of its demise was its success. The establishment of a medical school in Columbus had attracted the attention and received the hearty support of many civic-minded

[4] *Ohio State Journal* (Columbus), Feb. 285, 1847.

[5] *Ibid.*, Mar. 10, 1847.

[6] Starling Loving, "History of Starling Medical College," *Old Northwest Genealogical Quarterly*, 8, 1905, 105-135.

[7] The Ohio State University College of Medicine, *A Collection of Source Material Covering a Century of Medical Progress 1834-1934* (Blanchester, Ohio, 1934), 76.

citizens who confidently hoped the capital of the State would eventually become an educational center. Many of the citizens, including the medical fraternity, were therefore interested in and highly pleased with the success attending the opening of the newly established medical college in the city.

Among those favorably impressed was Mr. Lyne Starling, a pioneer settler of Columbus, the growth of which had made him wealthy from the sale of real estate. For some time he had contemplated donating a part of his wealth to some charitable purpose. As a result of the success of the Willoughby Medical College at Columbus, which lacked an endowment, he decided to make a donation for the foundation of a medical school and hospital.[8] Consequently on December 18, 1847, Mr. Starling, by deed of trust, bound himself to pay to certain specified individuals, as trustees, the sum of $30,000.00 for the use and support of a medical college and " to sustain an Infirmary or Hospital, or some other benevolent Institution, under the supervision and control of said Medical College, and in said city of Columbus." [9]

As a consequence of Mr. Starling's liberal donation, the Board of Trustees and Faculty of the Willoughby Medical College at Columbus voted to change the name of the institution to " Starling Medical College " out of gratitude to the donor.[10] The new Board of Trustees thereupon made application for a charter, which was granted by special act of the Ohio General Assembly, January 28, 1848.[11] The following day the Trustees and Faculty of Willoughby Medical College resigned [12] and the Board of Trustees of the newly charted Starling Medical College convened and on motion appointed a faculty, the personnel of which was similar to that of the former institution, with the exceptions that Dr. Spencer was not re-appointed, his chair having been combined with Dr. Smith's, and Dr. Francis Carter was appointed to the chair of Physiology and General Pathology.[13] During this reorganization student enrollment was transferred to the new institution and the graduating class of the session of

[8] Loving, *op. cit.*

[9] *Deed of Trust from Lyne Starling to Robert W. McCoy and others for Founding and Sustaining a Medical College in the City of Columbus* (Columbus, 1847), William B. Thrall, Printer.

[10] Loving, *op. cit.*

[11] Laws of Ohio, 46 (1848), 31.

[12] *Catalogue of the Officers and Students of the Starling Medical College for the Session of 1847-1848.*

[13] Minutes of the Board of Trustees.

1847-1848 received their degrees at the hands of the Board of Trustees of Starling Medical College.[14]

During the spring and summer of 1848 the Board of Trustees purchased three lots in the suburbs on East State Street and accepted a building plan drawn by R. A. Sheldon, a New York architect. In order to meet the estimated cost of the latter plan, namely $35,000.00, Mr. Starling signed another deed of trust in which he agreed to contribute an additional sum of $5,000.00 toward the erection of the medical college and hospital building.[15] Unfortunately Mr. Starling did not live to witness the fruits of his generosity, as he died November 21, 1848.[16]

The foundation of the new college and hospital building was laid in March 1849.[17] The architect had understimated the cost of the building and long before it was ready for occupancy the endowment had been expended, as a result of which additional funds were necessary, in order to complete and furnish it. Mr. Starling's heirs and other friends made liberal contributions and the faculty, with the trustees as surety, borrowed $10,000.00, thus making it possible for the building to be sufficiently near completion by the autumn of 1851 to receive classes in the regular session of 1851-1852. *The Ohio State Journal,* August 25, 1851, contains an announcement to the effect that the new building of Starling Medical College " will be occupied for the course of lectures, which will begin October 15."

In the September 9, 1851, issue of the same newspaper is a feature article entitled " Starling Medical College. The new Edifice," in which the building is described as being divided into three sections, each having its own entrance, buttress, gable, and tower. It goes on to say that the East section contains a library on the first floor, a museum on the second floor, and a room 44 feet long by 25 feet wide on the third floor for the study of practical anatomy; the middle section contains lecture and faculty rooms, the former having a seating capacity of about 450 and " the West section is fitted up for the family of the janitor and also for a hospital."

The style of architecture is old Norman Gothic (see fig. 1), over which the Columbus press and its citizens lavished their praise. It was boastfully claimed to be " architecturally one of the handsomest in the country." In Jean-Jacques Ampère's account of his journey through Ohio, in 1851, he tells about stopping over in Columbus and observing this building.

[14] *Ibid.*
[15] *Ibid.*
[16] *The Ohio State Journal,* Nov. 29, 1848.
[17] Loving, *op. cit.*

He describes it as having a large hexagonal tower and a mass of turrets with doors and windows of white marble, "having a false likeness to the Alhambra. I inquired of a passer-by what this strange building might be. He replied, smiling with an air of satisfaction: 'It's like a château.' And this bizarre château turned out to be a school of medicine." [18] *The Ohio State Journal* of December 16, 1851, assures us that "the lectures in this

FIG. 1

St. Francis Hospital
Columbus, Ohio
(*photo by the Dept. of Photography, Ohio State University*)

fine institution are progressing with much satisfaction to all parties. The new lecture rooms are complete."

However, at this date there were insufficient funds to complete the section containing the hospital, which lacked flooring, stairways, and windows, while other parts of the building were not yet plastered. In view of this financial situation Dr. Richard L. Howard and the trustees entered upon an agreement on August 23, 1852, whereby Dr. Howard bound himself to complete and furnish the West wing of the building

[18] Mildred Crew, "J. J. Ampère's Journey through Ohio, A Translation from his Promenade en Amerique." *Ohio State Archaeological and Historical Quarterly*, 60, 1951, 64-89.

for hospital purposes and to partly complete other portions of the building, " in consideration of the privilege to have the possession and use of said hospital department, under such rules and regulations as said trustees of the Starling Medical College shall make governing the relations between said hospital department and said Starling Medical College." [19] The announcement is made in *The Ohio State Journal*, September 28, 1852, that "the rooms for hospital purposes are nearly finished and vigorous progress is being made to finish the greater part of the building for use this winter."

Further evidence of the occupancy of the "Hospital Department" of this institution in the autumn of 1852 is presented in the "Catalogue of the Officers and Students of Starling Medical College for the Session of 1852-1853," in which it is stated that "Through the liberality of Prof. R. L. Howard, funds were advanced for the finishing and furnishing of the Hospital Department. This department has been placed under the Medical and Surgical superintendence and care of Prof. Howard, and is now occupied by patients. By the addition of this means, the largest clinical facilities will be furnished to students attending the Medical Department."

The salient features of the history of Starling Medical College and Hospital from 1851-1852 up to the present may be summarized briefly as follows: On February 17, 1865, the Catholic order of the Sisters of the Poor of St. Francis was given a ninety-nine year lease on that part of the building which was intended for hospital purposes, since which time it has been called St. Francis Hospital.[20] In 1898 an addition was added to the east wing of the building to provide space for dispensary rooms, a clinical laboratory, and an amphitheater; [21] on March 12, 1907, Starling Medical College merged with Ohio Medical University of Columbus, the new institution being chartered as The Starling-Ohio Medical College.[22] On January 10, 1913, the Board of Trustees of The Starling-Ohio Medical College submitted a proposal to the Board of Trustees of the Ohio State University offering to the latter its rights, titles, and property of its College of Medicine, Dentistry, and Pharmacy.[23] This offer was accepted and an Act of the Ohio General Assembly enabled the

[19] Official Records of the Board of Trustees.

[20] Deed Book 40, p. 5, Franklin County Records.

[21] Official Records of Board of Trustees.

[22] Official Records of the Boards of Trustees of Starling Medical College and of Ohio Medical University.

[23] Official Records of the Board of Trustees of Starling-Ohio Medical College.

trustees of the Ohio State University to organize and maintain the aforesaid colleges.[24] By 1923 a University Hospital (Starling Loving Hospital) and a combined Medical and Dental building were constructed on the Campus of the Ohio State University.[25] Up to this time the combined physical facilities provided by St. Francis Hospital and those originally owned by the Ohio Medical University were utilized, including laboratories, lecture rooms, libraries, museums, dispensaries, surgical amphitheaters, and hospital wards. In 1938 a new dispensary wing was added to the University Hospital, up to which time the College of Medicine had been utilizing the dispensary rooms in St. Francis Hospital.[26] Finally it should be stressed that even to the present day ward patients at St. Francis Hospital are used by the College of Medicine of Ohio State University for bedside instruction and conference clinics.

The faith and vision of the founding-fathers of those medical institutions which were antecedents of the Ohio State University College of Medicine is further fulfilled this year by the completion and dedication of the University Health Center, a joint undertaking by the University Board of Trustees and the State Departments of Health and Public Welfare. The completion of this great project, which represents an expenditure of more than 15 million dollars by the State of Ohio, is a fitting means of celebrating the centenary anniversary of the establishment of Starling Medical College and Hospital. Notwithstanding the greatly increased educational, research, and clinical facilities afforded by this new Health Center, St. Francis Hospital will continue to serve the functions for which it was originally founded, as specified in the Deed of Trust from Lyne Starling, namely " that said premises shall forever be by said Trustees and their successors held in trust to and for the sole use of a Medical College and Infirmary or Hospital." [9]

It should be stated quite frankly that alumni and friends of The Ohio State University College of Medicine, which is a descendant of Starling Medical College, are at a loss to understand the failure of medical historians to give the latter institution due credit for having been the first medical school in America to erect and have the exclusive control of its own hospital, which has been in continuous operation ever since its founding. The only reference made by Packard to this institution was a single statement to the effect that when the Willoughby Medical School was

[24] Laws of Ohio 103 (1913), 344.
[25] *Bulletins* of the Ohio State University Colleges of Medicine and of Dentistry.
[26] *Ibid.*

transferred to Columbus in 1847 it was reorganized as Starling Medical College.[27]

Norwood, who apparently obtained most of his information concerning this institution from histories of Columbus and of Franklin County, Ohio, states that the medical college and hospital building was completed in 1855.[28] But no mention is made of the fact that the conjoined medical college and hospital were at that time under the joint control of the Board of Trustees.

Although the claim is not made here that Starling Medical College should be credited with having inaugurated the medical college-hospital system of medical instruction in the United States—a claim, incidentally, which has been made for at least three different medical schools, namely, The Long Island College Hospital of Brooklyn, New York,[29] the New York Medical College,[30] and the National Medical College, Medical Department of Columbian College, Washington, D. C.,[31]—there is no question but that St. Francis Hospital of Columbus, Ohio is the first medical college hospital in the United States to be built by and operated under the exclusive control of the Board of Trustees of a medical college and, moreover, to have been in continuous operation and under such control for at least a century.

[27] Francis R. Packard, *History of Medicine in the United States*, vol. II, 1931, 321.

[28] William Frederick Norwood, *Medical Education in the United States before the Civil War*, 1944, 328-329.

[29] James J. Walsh, *History of Medicine in Nek York*, vol. 2, 1919, 506-527.

[30] Abraham Jacobi, "The New York Medical College 1782-1906," *Annals of Medical History*, I, 1917, 368-373.

[31] Robert W. Prichard, *Historical Sketch of the Medical School, 1825-1947, The George Washington University*, published by the University at Washington, D. C., 1947.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

AN EXHIBIT ON THE HISTORY OF MEDICAL HISTORIOGRAPHY

On the occasion of the 24th annual meeting of the American Association of the History of Medicine, Baltimore, May 3-5, 1951, the Johns Hopkins Institute of the History of Medicine put on display an exhibit on the history of medical historiography. The aim of the exhibit was to document some of the main trends in the writing of medical history during the various periods from Hippocrates to the end of the nineteenth century. The books were displayed in fourteen cases, each containing a short summary of the period covered and brief characteristics of the works shown.

The available space made a severe selection necessary and imposed the end of the nineteenth century as a chronological limit. This limit was transcended only in so far as one case (XIV) was reserved to work dealing with the history of medical historiography. The publications shown in this case, especially those by Dr. Heischkel, were of considerable help in the preparation of the exhibit.

In the following description of the exhibit, short title entries are given for the items displayed. The roman numerals refer to the exhibition cases; summaries and legends are printed with but slight changes from the original typescripts.

I. Graeco-Roman Antiquity

The Graeco-Roman period did not develop medical historiography in the modern sense. Such historical accounts as there were dealt chiefly with speculations about the origin of medicine, its mythological founders, the various medical sects and their main representatives, the opinions—and lives—of eminent physicians. However, the historical chapters in Celsus and Pliny and the biography of Hippocrates ascribed to Soranus exerted great influence upon the Renaissance and following centuries.

Hippocrates. **Περὶ ἀρχαίης ἰητρικῆς.** In: W. H. S. Jones, *Philosophy and Medicine in Ancient Greece* (Baltimore: The Johns Hopkins Press. 1946).—The treatise "On Ancient Medicine" of the Hippocratic Collection offers in chapter 3 one of the oldest rational theories on the origin and development of medicine.

W. H. S. Jones. *The Medical Writings of Anonymus Londinensis* (Cambridge: at the University Press, 1947).—The Anonymus Londinensis, by an unknown author, is preserved in the British Museum in a papyrus of the second century A. D. It is probably based on the work of Aristotle's pupil, Menon, who gathered the opinions of various older Greek physicians.

The Life of Hippocrates from Soranus. In: Hippocrates, *Upon Air, Water, and Situations*, etc. Translated by Francis Clifton. Second edition (London, 1752).—This life of Hippocrates, which is ascribed to Soranus (c. 100 A. D.),

is an example of the learned biographical studies by ancient scholars who, however, were not able to sift historical facts from traditional tales.

A. Cornelius Celsus. *De medicina* (Venice, 1497).—Celsus begins his *De medicina* with a discussion of the origin of medicine and of the main sects and their representatives down to the beginning of the first century A. D.

Pliny. *The Historie of the World, Commonly Called the Naturall Historie,* Book XXIX. Translated by Philemon Holland (London, 1601).—Pliny's *Natural History,* in the beginning of Book XXIX, contains an outline of medical history together with a criticism of the medical art.

Galen. Εἰσαγωγὴ ἢ ἰατρός. In: *Opera omnia,* t. XIV, pp. 674-797. Ed. C. G. Kühn (Leipzig, 1827).—The "Introduction or the Physician," falsely ascribed to Galen, is a short outline of medicine which contains some chapters on the mythological origin of medicine, its sects and their main followers.

II. Middle Ages

In the Latin West, medical historiography faintly echoed ancient traditions. The most notable exception is Guy de Chauliac's "Chapitre singulier" of his *Grande Chirurgie* in which he presents a critical discussion of the history of surgery. Medical historiography in the Arabic East, far superior to its Western counterpart, reached its height with Ibn Abī Uṣaibi'a in the thirteenth century.

Ibn Abī Uṣaibi'a. *'Uyūn al- anbā' fī Ṭabakāt al- Aṭibbā.'* Ed. A. Müller (Cairo, 1882; Königsberg, 1884).—Ibn Abī Uṣaibi'a, born in Damascus in 1203, physician at Cairo and Sarkhad, where he died in 1270, was the greatest of Arabic medical historians. His "Springs of Information on the Classes of Physicians" is an outstanding bio-bibliographical work, and is one of the main sources of our knowledge of Arabic medicine. (Courtesy Army Medical Library.)

Ars medicinae. Ein frühmittelalterliches Kompendium der Medizin. Ed. Rudolf Laux. In: *Kyklos,* 1930, vol. 3, pp. 417-434.—This anonymous, early medieval treatise on "The Art of Medicine" begins with chapters on Asclepius, Hippocrates, and the ancient medical sects.

Chapitre singulier. In: Guy de Chauliac. *La Grande Chyrurgie.* Translated by Simon Mingelousaulx (Bordeaux, 1672).—Guy de Chauliac (14th century) in the "Chapitre singulier" of his *Grande Chirurgie* included two historical accounts of the development of surgery dealing with past and present authors and groups. His critical evaluation is partly traditional, partly based on independent judgment.

Pietro d'Abano. *Conciliator controversiarum, quae inter philosophos et medicos versantur* (Venice, 1548).—Pietro d'Abano (died 1315) was one of the first medieval physicians acquainted with Celsus on whom he greatly depended in his short historical chapter of the *Conciliator.*

III. Renaissance

The first great work on medical history published in the Renaissance was Symphorien Champier's (1472-c. 1540) book on famous medical authors. The

biographical approach of the Renaissance parallels the general interest of the period in outstanding individuals and their achievements. It was also connected with the teaching in the universities which centered around the reading of authoritative texts of a few selected authors.

Symphorien Champier. *Libelli duo*: primus de medicinae claris scriptoribus in quinque partibus tractatus, etc. (Lyon, 1506).—The first "booklet" in this work deals with "the famous authors of medicine." (Courtesy of Dr. W. B. McDaniel, II, Librarian, College of Physicians of Philadelphia.)

Bibliotheca instituta et collecta, primum a Conrado Gesnero: Deinde in Epitomen redacta, et novorum librorum accessione locupletata, tertio recognita, et in duplum post priores editores aucta, per Iosiam Simlerum: Iam vero postremo aliquot mille, cum priorum tum novorum authorum opusculis, ex instructissima Viennensi Austria Imperatoria Bibliotheca amplificata, per Iohannem Iacobum Frisium Tigurinum (Zurich, 1583).—Conrad Gesner, in 1545, brought out his *Bibliotheca universalis* which constituted one of the most important general bibliographical works of the Renaissance in which medical authors also found due consideration. The *Bibliotheca universalis* soon was epitomized, among others by Josias Simler. This copy represents a new edition of Simler's epitome by Tigurinus.

Galen. *Omnia quae extant opera* . . . ex secunda Juntarum editione (Venice: Junta, 1550).—The title pages of this Latin edition of Galen's works illustrate the picture which physicians of the Renaissance had of ancient medicine.

IV. Sixteenth–Seventeenth Century

Medical historiography in the 16th–17th century was mainly concerned with bio-bibliography. The works of Spach, Schenck of Grafenberg, Adam, and Van der Linden are notable examples. Van Almeloveen illustrates the war between the "moderns" and the "ancients." Conring was a forerunner of a more critical and universalistic attitude.

Israel Spach. *Nomenclator scriptorum medicorum* (Frankfurt, 1591).—Israel Spach (1560-1610) gives a subject bibliography of medicine.

Johann Georg Schenck of Grafenberg. *Biblia iatrica*, sive Bibliotheca medica (Frankfurt, 1609).—Johann Georg Schenck of Grafenberg (died c. 1620) followed a biographical order.

Georg Abraham Mercklin. *Lindenius Renovatus*, sive, Johannis Antonidae van der Linden, De scriptis medicis, libri duo (Nuremberg, 1686).—Johann Antonides van der Linden's (1609-1664) *De scriptis medicis libri duo* (1637), re-edited by Mercklin, was a bio-bibliographical standard work of the 17th century.

Melchior Adam. *Vitae Germanorum medicorum* (Heidelberg, 1620).—Melchior Adam (died 1622) contributed an early biographical work of German physicians, notably those who flourished in the 16th and early 17th centuries. Adam, who was not a physician, wrote similar works on philosophers, theologians, jurists, and statesmen.

Theodorus Janssonius ab Almeloveen. *Inventa nov-antiqua* (Amsterdam, 1684).—

Theodorus Janssonius ab Almeloveen (1651-1712), who was professor of history, Greek, and medicine, tried to prove the originality of the "ancients" even with regard to "modern" discoveries.

Hermann Conring. *In universam artem medicam singulasque ejus partes introductio.* Ed. Gunther Christoph Schelhammer (Spira, 1688).—Hermann Conring (1606-1681), a polyhistor of wide repute, in chapters 2 and 3 of the present work attempted a critical periodization of the history of medicine.

V. Period of Le Clerc and Freind

In the early part of the 18th century "learned historiography," initiated by Le Clerc in 1696, predominated. It was based on a study of original sources and an attempt to break loose from the semi-mythological tradition. The works of Le Clerc and Freind, both written in the vernacular, mark the beginning of a new period in medical historiography and of the pragmatic tendency.

Johann Heinrich Schulze. *Historia medicinae* (Leipzig, 1728).—Johann Heinrich Schulze's (1687-1744) *Historia medicinae* ends with the advent of Greek medicine in Rome. In his book Schulze utilized chronological tables.

Andreas Ottomar Goelicke. *Historia medicinae universalis* (Frankfurt, 1721).—Andreas Ottomar Goelicke (1671-1744) also wrote histories of anatomy and surgery.

Daniel Le Clerc. *Histoire de la médecine* (Amsterdam, 1723).

Daniel Le Clerc. *The History of Physick.* Translated by Drake and Baden (London, 1699).

With Daniel Le Clerc's (1652-1728) *Histoire de la médecine* (first edition 1696) there begins modern medical historiography on a critical basis and written in the vernacular. The bulk of the work is devoted to ancient medicine to the time of Galen. Later periods are dealt with in a short essay.

Joh. Conr. Barchusen. *De medicinae origine et progressu dissertationes* (Utrecht, 1723).—This work by Barchusen (1666-1723) is a collection of essays in which the historical method is utilized to discuss medical problems current in the 18th century. It constitutes the revised edition of his *Historia medicinae* of 1710.

John Freind. *The History of Physick,* 2 vols. (London, 1725-1726).—The period from Galen to the 16th century, treated cursorily by Le Clerc, was made the subject of *The History of Physick* by John Freind (1675-1728). The work was initiated while Freind was in the tower as a political prisoner.

VI. Later Eighteenth Century

Medical historiography in the later 18th century centered around the great bio-bibliographical works of Albrecht von Haller and his successors, especially in Germany, and was dominated by the attempt to derive useful lessons from history. At the same time, comprehensive histories of special medical disciplines (e. g. surgery) appeared which are still used today.

François Quesnay. *Recherches critiques et historiques sur l'origin, sur les divers états et sur les progrès de la chirurgie en France* (Paris, 1744).—In his history

of surgery in France, François Quesnay tried to uphold surgery against medicine. Although unreliable, the work has enjoyed great popularity.

Rosario Scuderi. *Introduzione alla storia della medicina antica e moderna* (Naples, 1794).—The introduction to the history of medicine by Rosario Scuderi (1767-1806) traces the development of medicine, disregarding biographical details.

Albrecht von Haller. *Bibliotheca medicinae practicae,* 4 vols. (Basel-Berne, 1776-1788).—Albrecht von Haller's (1708-1777) "Bibliothecae" (botanica, anatomica, chirurgica, and medicinae practicae) are still fundamental tools for medico-historical research.

Johann Friedrich Blumenbach. *Introductio in historiam medicinae litterariam* (Göttingen, 1786).—Johann Friedrich Blumenbach's (1752-1840) introduction to the literary history of medicine is one of many similar works intended for the use of medical students. The present copy was owned by F. Leuckart (1794-1843), best known for his studies on invertebrate anatomy.

John Coakley Lettsom. *History of the Origin of Medicine* (London, 1778).—This oration of John Coakley Lettsom (1744-1815) deals with the history of various branches of medicine. The copious footnotes embody much interesting material of contemporary medicine and science.

William Black. *An Historical Sketch of Medicine and Surgery* (London, 1782).—William Black (died 1829) tried to connect the history of medicine with political and cultural history. (Courtesy Dr. W. B. McDaniel, II, Librarian, College of Physicians of Philadelphia.)

VII and VIII. American Medical Historiography

Several brief accounts of the general history of medicine were prepared in the 18th century as introductions to contemporary medicine. Mid-nineteenth century studies were usually related to more limited themes; but after 1860 a number of general histories appeared which viewed medical history as a subject in itself. Most of these were based on European authorities.

Peter Middleton. *A Medical Discourse, or an Historical Inquiry into the Ancient and Present State of Medicine* (New York, 1768).—Peter Middleton (died 1781) published his "Historical Inquiry" while a professor in the Medical School of King's College (Columbia). It is probably the first American attempt at a general account of medical history. (Photostats, Courtesy of Dr. W. B. McDaniel, II., Librarian, College of Physicians of Philadelphia.)

Benjamin Waterhouse. *The Rise, Progress, and Present State of Medicine* (Boston, 1792).—Benjamin Waterhouse (1754-1846) of Boston, well-known for his introduction of vaccination into the United States, originally published this essay in 1786. Like his fellow Americans, Middleton, Rush, and Ramsay, in this same era, Waterhouse used history as an introduction to analyses of contemporary medicine. (Courtesy of Dr. W. B. McDaniel, II, Librarian, College of Physicians of Philadelphia.)

David Ramsay. *A Review of the Improvements, Progress, and State of Medicine in the XVIIIth Century* (Charleston, 1801).—David Ramsay (1749-1815) pre-

pared his "Review" by way of celebrating the advent of the nineteenth century. Delivered before a Charleston audience, the study provides an interesting interpretation of medical trends during the Enlightenment. Ramsay was unusual in being a well-known general historian as well as a prominent physician.

Benjamin Rush. An Inquiry into the Comparative State of Medicine in Philadelphia, between the Years 1760 and 1766, and the Year 1809. In: *Medical Inquiries*, vol. 4, third edition (Philadelphia, 1809, pp. 383-437).—Benjamin Rush (1745-1813) prepared no major historical studies in the course of his many writings. But in this paper he sought an historical perspective on contemporary medicine by contrasting it with that of the era of his own youth.

Benjamin Rush. Upon the Causes Which Have Retarded the Progress of Medicine. In: *Six Introductory Lectures . . . upon the Institutes and Practice of Medicine* (Philadelphia, 1801, pp. 143-168).—A second paper by Benjamin Rush which displays an historical perspective (but without documentation) is this lecture which offers an interesting analysis, but includes no intimation that his own efforts may have contributed to this same end.

James Thacher. *American Medical Biography*, 2 vols. in 1 (Boston, 1828).—James Thacher (1754-1844) of Plymouth, Mass., is well known as the pioneer American medical biographer. The work preserved much information about early physicians, and contains an introductory section on American medical history. Perhaps this early attempt at national history was inspired by the author's Revolutionary background. Arranged by states, the section devotes 30 pages to Massachusetts, 4 to Connecticut, 3 to Virginia, etc.

John Redman Coxe. *The Writings of Hippocrates and Galen* (Philadelphia, 1846).—John Redman Coxe (1773-1864), the distinguished pharmacologist and medical journalist of Philadelphia, possessed scholarly interests and a library of 15,000 volumes. In 1846 he published his *Writings of Hippocrates and Galen*. This contains abstracts of the treatises which, Edelstein observes, are "still valuable and constitute even today (1947) the only survey which is at hand of the most important works. . . ."

Noah Webster. *A Brief History of Epidemic and Pestilential Diseases*, 2 vols. (London, 1800).—A considerable group of Americans were inspired by the epidemics of the 1790's to write historical accounts of "the fevers,"—notably William Currie and Noah Webster (1758-1843). Although a layman, Webster has been viewed by Winslow and others as the pioneer American epidemiologist.

Robley Dunglison. *History of Medicine from the Earliest Ages to the Commencement of the Nineteenth Century*. Ed. Richard J. Dunglison (Philadelphia, 1872).—Robley Dunglison (1798-1869), of English origin, is well known for his pioneer American text on *Human Physiology* (1832) and his *Medical Dictionary* (1833). He was brought to Virginia in 1824 by Jefferson in order to lecture on "The History of the Progress and Theories of Medicine" as well as on other subjects; and his *History of Medicine* (1872) was edited by his son on the basis of these lectures given at the University of Virginia in the late 1820's. The son laments that by 1870 lectures on medical history were no longer offered.

[Wilson Jewell]. A History of Quarantine. Report of the Committee on Quarantine. *Proceedings and Debates of the Third National Quarantine and Sanitary*

Convention (New York, 1859, pp. 247-297).—This "History of Quarantine" was submitted to the Third National Quarantine and Sanitary Convention by its Committee on Quarantine. The author was probably Dr. Wilson Jewell of the Philadelphia Board of Health (Chairman), who had initiated the Conventions. This study, like those of the 18th century, was presented as a prelude to contemporary analysis.

J. M. Toner. *The Medical Men of the Revolution* (Philadelphia, 1876).—Joseph M. Toner (1825-1896), a practitioner in Washington, D. C., after 1855, and a president of the A. M. A. (1874), was an outstanding collector of the records of earlier American physicians. His flair for locating and preserving biographical data is well indicated in this study.

Periodical Medical Publications of the United States. *Transactions of the American Medical Association*, vol. 1, 1848, pp. 250-288.—This Report of the Committee on Medical Literature to the A. M. A. provides a useful history of earlier American medical publications. Written with some verve and having implications for the American culture of the mid-century, it was probably the work of the Chairman, Oliver Wendell Holmes.

Henry E. Handerson. Medicine in the English Colonies of North America during the Eighteenth Century. In: Joh. Herman Baas. *Outlines of the History of Medicine and the Medical Profession.* Tr. H. E. Handerson (New York, 1889).—Henry E. Handerson (1837-1918) was a practitioner and professor of hygiene in Cleveland after 1885. In translating Baas' *Geschichte der Medizin* in 1889, Handerson added sections on American medical history which represented more serious work than most of that then being done in this country. Garrison said of these sections that they were "based on original investigation and [were] of permanent value to all future historians."

A Century of American Medicine, 1776-1876. By Edward H. Clarke and others (Philadelphia, 1876).—This volume was inspired by the centennial celebrations. It includes papers on surgery, obstetrics, gynecology, and anesthesia, which suggests how large the operative branches were beginning to loom on the professional horizon by this time. Particularly notable, however, is the appearance of a critical rather than a eulogistic tone in the essay by Dr. E. H. Clarke of Harvard on "Practical Medicine," and in J. S. Billings' valuable paper on "Literature and Institutions."

Roswell Park. *An Epitome of the History of Medicine.* Second edition (Philadelphia, 1899).—Roswell Park (1852-1914), a distinguished surgeon, offered a course of lectures on medical history at the University of Buffalo in the middle 1890's. The *Epitome* (first edition 1897) was based on this course, which Dr. Park claimed was the "first attempt in the medical schools of this country to give systematic instruction in the History of the Science which they teach. . . ." Medical history is here viewed as a subject in itself. The book, based on standard European authorities, is not well organized.

Francis R. Packard. *History of Medicine in the United States,* 2 vols. (New York: Hoeber, 1931).—The late Dr. Francis R. Packard of Philadelphia published his *History* (first edition, 1901) within a few months of the end of the nineteenth century. It is therefore included here, as ushering in an era within the memory of some contemporary medical historians.

IX. Nineteenth Century: German Romanticism

At the turn of the century German medical historiography took the lead with Sprengel. In the following decades the Romantic spirit prevailed with its love for the past which led to detailed studies of older periods. The reaction against Romanticism is marked in Wunderlich's book.

Kurt Sprengel. *Versuch einer pragmatischen Geschichte der Arzneykunde.* Third edition, 5 vols. (Halle, 1821-1828).—With Kurt Sprengel's (1766-1833) large history of medicine the pragmatic point of view reached its height. The work (originally published in 1792 f.) was re-edited several times and translated into French and Italian in the early 19th century.

Ludwig Choulant. *Geschichte und Bibliographie der anatomischen Abbildung* (Leipzig, 1852).—The history of anatomical illustration of Ludwig Choulant (1791-1861) exemplifies the many new aspects into which the Romantic interest in the past led medical historiography. (English translation by Mortimer Frank, Chicago, 1920.)

Heinrich Damerow. *Die Elemente der nächsten Zukunft der Medicin* (Berlin, 1829).—H. P. A. Damerow (1798-1866) wrote one of the early examples of a "philosophical" history of medicine.

Janus. Zeitschrift für Geschichte und Literatur der Medicin. Ed. A. W. E. Th. Henschel (Vol. 1, 1846).—The impetus given to medical history in Germany during the first part of the 19th century is documented by the appearance, in 1846, of *Janus*, a medico-historical journal on a large international cooperative basis.

J. F. C. Hecker. *Die grossen Volkskrankheiten des Mittelalters.* Ed. August Hirsch (Berlin, 1865).—J. F. C. Hecker (1795-1850) wrote a history of medicine and many other historical contributions. His work on medieval epidemics has remained a classic. The present edition, enlarged by A. Hirsch, is the most valuable one. B. G. Babington translated the book into English.

C. A. Wunderlich. *Geschichte der Medicin* (Stuttgart, 1859).—C. A. Wunderlich (1815-1877), famous clinician, was one of the leaders in the fight against speculative medicine. His history of medicine is strongly tinged by a polemical spirit.

X. Nineteenth Century: Germany 1860-1900

In the second half of the 19th century, with the rise of scientific medicine in Germany, historiography lost much of its general appeal. On the other hand, it became more factual and less guided by philosophical tendencies. This case contains some of the leading textbooks written in the period as well as some examples of the detailed studies of special subjects. As Haeser and Hirsch show, historical epidemiology was especially cultivated. Several of the works, notably those by Hirsch, Baas, and Puschmann, have been translated into English.

August Hirsch. *Handbuch der historisch-geographischen Pathologie.* Second edition, 3 vols. (Stuttgart, 1881-1886).—August Hirsch (1817-1894) is best known through his handbook of historical-medical pathology, the second edition of which documents the beginning transition from the older environmental to the bacteriological concept of infectious disease.

Joh. Hermann Baas. *Grundriss der Geschichte der Medicin und des heilenden Standes* (Stuttgart, 1876).—J. H. Baas (1838-1909) wrote his textbook from the point of view of the practicing physician. His emphasis on the history of the profession is especially valuable.

E. Gurlt. *Geschichte der Chirurgie und ihrer Ausübung*, 3 vols. (Berlin, 1898).—E. J. Gurlt's (1825-1899) history of surgery, which in three big volumes covered the field from antiquity to the 17th century, is an example of the detailed research of the period.

Heinrich Haeser. *Lehrbuch der Geschichte der Medicin und der epidemischen Krankheiten*. Third edition, 3 vols. (Jena, 1875-1882).—Heinrich Haeser (1811-1884) published the first edition of his textbook in 1845. This as well as his historical-pathological investigations of 1839-41 were strongly influenced by Romantic ideas. The third edition of his textbook, still one of the best in the field, shows a transition to a positivistic attitude.

Theodor Puschmann. *Geschichte des medicinischen Unterrichts von den ältesten Zeiten bis zur Gegenwart* (Leipzig, 1889).—Theodor Puschmann's (1844-1899) history of medical education is still a standard work.

Julius Pagel. *Einführung in die Geschichte der Medicin* (Berlin, 1898).—Julius Pagel (1851-1912) re-emphasized the pragmatic point of view in the first edition of his introduction to the history of medicine. The book was re-edited by Karl Sudhoff who changed its character in the direction of a bibliographical reference work. The 100th anniversary of Julius Pagel's birth (May 29, 1951) is being celebrated this year.

XI. Nineteenth Century: France

The interest in medical history in France was revived by the French Revolution and the consequent reorganization of medical education and research. While the connection between medicine and historiography remained strong in the early part of the century, an increasing tendency towards positivistic research on a documentary basis became visible around 1840. Littré's monumental edition of the works of Hippocrates (omitted here since not strictly historiographical) united both trends. French historiography reached its height in the 19th century with the classical work of Daremberg.

P. J. G. Cabanis. *Coup d'oeil sur les révolutions et sur la réforme de la médecine* (Paris, 1804).—P. J. G. Cabanis (1757-1808) wrote this book at the height of the French Revolution but had it published in the Napoleonic era.

J. E. Dezeimeris. *Lettres sur l'histoire de la médecine* (Paris, 1838).—J. E. Dezeimeris (1799-1852) insisted on the teaching of medical history and bibliography, drawing attention to the parallel developments in Germany.

P.-V. Renouard. *Histoire de la médecine depuis son origine jusq'au XIX^e siècle*, 2 vols. (Paris, 1846).—P.-V. Renouard's (born 1798) history of medicine was offered as a contribution to medicine and therefore lays main stress on medical achievements in various fields.

Jules Rochard. *Histoire de la chirurgie française au XIX^e siècle* (Paris, 1875).—Jules E. Rochard's (1819-1896) detailed work is interesting because it attempts to trace the progress of surgery in the 19th century before the acceptance of the antiseptic principle.

G. J. Witkowski. *Histoire des accouchements chez tous les peuples* (Paris, 1887).—G. J. Witkowski's (born 1853) history of obstetrics is one example among many of the historiography of special medical disciplines.

J. A. F. Ozanam. *Histoire médicale générale et particulière des maladies épidémiques, contagieuses et épizootiques.* Second edition, 4 vols. in 2 (Paris-Lyon, 1835).—The prevailing interest of the century in historical epidemiology was documented by the work of J. A. F. Ozanam (1773-1837), the first edition of which appeared in 1817-23.

Ch. Daremberg. *Histoire des sciences médicales,* 2 vols. (Paris, 1870).—C. V. Daremberg (1817-1872), a friend of Littré with strong philological interests, did his most valuable work in the field of ancient and medieval medical history.

XII. Nineteenth Century: Great Britain

While a considerable number of general histories of medicine were published in Great Britain during the 19th century, they were not on the whole comparable in importance with the parallel French and German works. The strength of British historiography lay in some outstanding works dealing with particular aspects of medicine and public health, and in a large number of excellent biographies.

Charles Creighton. *A History of Epidemics in Britain,* 2 vols. (Cambridge, 1891). Charles Creighton's (1847-1927) book, covering in two volumes the history of epidemic diseases in England from 664 to 1893, is a work of wide erudition. Its limitation to one country allowed a more thorough coverage than the general works of Haeser and Hirsch in the field of historical epidemiology.

J. Bostock. *Sketch of the History of Medicine,* from Its Origin to the Commencement of the Nineteenth Century (London, 1835).—John Bostock's (1773-1846) short sketch is often dependent on secondary sources.

John Simon. *English Sanitary Institutions* (London, 1890).—John Simon (1816-1904) wrote the history of a subject of which he was one of the most active protagonists.

John Flint South. *Memorials of the Craft of Surgery in England* (London, 1886).

The Annals of the Barber-Surgeons of London, Compiled from Their Records and Other Sources, by Sidney Young (London, 1890).

Written around an abundant amount of early source material, these two books form an indispensable reference work for older British surgery and an example of the "documented" history of a profession.

Edward Theodore Withington. *Medical History from the Earliest Times* (London, 1894). E. T. Withington's (born 1860) medical history is the best British textbook of the last century and is still valuable today.

William Macmichael. *The Gold-Headed Cane.* Second edition (London, 1828).—William Macmichael (1784-1839) wrote the "biography" of the cane that had belonged to J. Radcliffe, R. Mead, A. Askew, W. Pitcairn, and M. Baillie. First published in 1827, this biographical history became very popular.

XIII. Nineteenth Century: Other Countries

Most European countries in the 19th century contributed to medical historiography by works covering the whole field, the history of medicine in their own country,

or of a particular aspect. With the founding of the new *Janus*, international cooperation was assured towards the close of the century.

C. Broeckx. *Essai sur l'histoire de la médecine Belge, avant le XIX^e siècle* (Gand, 1837).—Corneille Broeckx (1807-1869), Belgium.

W. E. Ludeking. *Levensberigten en Lettervruckten van Nederlandsche Geneeskundigen, van de Vroegste Tijden tot op Onze Dagen* (Brielle, 1847).—W. E. Ludeking (1805-1882), The Netherlands.

Antonio Hernandes Morejon. *Historia bibliográfica de la medicina Española*, 7 vols. (Madrid, 1842-1852).—A. Hernandez Morejon (1773-1836), Spain.

Wilhelm Michael Richter. *Geschichte der Medicin in Russland*, 3 vols. (Moscow, 1813-1817).—W. M. Richter (1767-1822), Russia.

Janus. Archives internationales pour l'histoire de la médecine et pour la géographie médicale. Ed. H. F. A. Peypers (Vol. 1, 1896-1897).

Jul. Petersen. *Hauptmomente in der geschichtlichen Entwickelung der medicinischen Therapie*. (Copenhagen, 1877).—J. J. Petersen (1840-1912), Denmark.

Francesco Puccinotti. *Storia della medicina*, 3 vols. in 4 (Livorno, 1850-1866).—F. Puccinotti (1794-1872), Italy.

Otto E. A. Hjelt. *Svenska och Finska Medicinalverkets Historia*, 1663-1812, 3 vols. (Helsingfors, 1891-1893).—Otto E. A. Hjelt (1823-1913), Finland.

XIV. History of Medical Historiography

After some beginnings in the 19th century, the history of medical historiography was stimulated by Paul Diepgen in 1924. Most contributions in the field were made by Diepgen and his pupil, Edith Heischkel.

Paul Diepgen. Zur Geschichte der Historiographie der Medicin. *Medizin und Kultur*, Gesammelte Aufsätze von Paul Diepgen (Stuttgart: Ferdinand Enke, 1938, pp. 8-30).—This paper by Paul Diepgen first appeared in 1925.

Edith Heischkel. *Die Medizingeschichtschreibung von ihren Anfängen bis zum Beginn des 16. Jahrhunderts* (Berlin: Emil Ebering, 1938).

Edith Heischkel. *Die Medizinhistoriographie im XVIII. Jahrhundert* (Leiden: E. J. Brill, 1931).

Paul Diepgen. Albrecht Haller und die Geschichte der Medizin. In: *Historische Studien und Skizzen zu Natur- und Heilwissenschaft*. Festgabe Georg Sticker (Berlin: Julius Springer, 1930).

Hans von Seemen. *Zur Kenntnis der Medizinhistorie in der deutschen Romantik* (Zürich: Füssli, 1926).

Edith Heischkel. Die deutsche Medizingeschichtschreibung in der ersten Hälfte des 19. Jahrhunderts. *Klinische Wochenschrift*, vol. 12, 1933, pp. 714-717.

Ludwig Edelstein. Medical Historiography in 1847. "One Hundred Years Ago," *Bulletin of the History of Medicine*, vol. 21, 1947, pp. 495-511.

Paul Diepgen. Das Schicksal der deutschen Medizingeschichte im Zeitalter der Naturwissenschaften und ihre Aufgaben in der Gegenwart. *Deutsche medizinische Wochenschrift*, 1934, vol. 60, pp. 66-70.

Edith Heischkel. Die Geschichte der Medizingeschichtschreibung. Appendix in: Walter Artelt, *Einführung in die Medizinhistorik* (Stuttgart: Ferdinand Enke, 1949).

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

Officers Elected

The following officers were elected at the twenty-fifth annual meeting of the Association in Kansas City, Kansas, May 1-3: President, Dr. John F. Fulton; Vice-President, Dr. George W. Corner; Secretary, Dr. Samuel X. Radbill; Treasurer, Dr. Emerson C. Kelly; Editor, Dr. Owsei Temkin.

Dr. Iago Galdston, Dr. Lloyd G. Stevenson, and Dr. David A. Tucker, Jr., were elected members of the Executive Committee. Dr. Chauncey D. Leake, Dr. Esmond R. Long, and Dr. George Rosen were elected to form the Nominating Committee.

The following appointments of delegates to the International Society of the History of Medicine were made for 1952. For the United States: Delegate, Dr. Ralph H. Major; Alternate, Dr. Richard H. Shryock. For Canada: Delegate, Dr. W. W. Francis; Alternate, Dr. Lloyd G. Stevenson.

Awards of Medals

At the twenty-fifth annual meeting in Kansas City, Kansas, May 1-3, announcement was made of the following awards:

THE WILLIAM OSLER MEDAL for the best student essay submitted was awarded to:

Herbert S. Klickstein, a student at the University of Pennsylvania, School of Medicine, for his essay on "A Short History of the Professorship of Chemistry of the University of Pennsylvania Medical School."

Honorable mention, with one year's subscription to the *Bulletin*, went to:

Raymond Gambrino, a student at the University of Rochester, School of Medicine, for his essay on "The Royal Society, the Seventeenth Century and the Transfusion of Blood."

George Goodman, a student at the New York University School of Medicine, for his essay on "Angina Pectoris."

THE WILLIAM H. WELCH MEDAL was awarded to Dr. Owsei Temkin of the Johns Hopkins University School of Medicine.

NATIONAL NEWS

PROFESSOR URDANG'S SEVENTIETH BIRTHDAY

On June 13, 1952, George Urdang will celebrate his seventieth birthday. Born in Tilsit, Germany, he received his pharmaceutical education at the University of Leipzig, and in 1919 became editor of the *Pharmaceutische Zeitung*. Adding graduate study in history of science, pharmaceutical chemistry, and economics to

his professional duties, he received a Ph. D. degree with a historical dissertation under E. von Lippmann, the famous author of the *Entstehung und Ausbreitung der Alchemie*. Until 1934, George Urdang was the director of the Society of the History of Pharmacy which he, with four others, had founded. When the Nazi regime drove him from Germany, he found a new home in the United States, in New York first, then in Madison, Wisconsin, where the American Institute of the History of Pharmacy was founded in 1941. He became its Director and, in 1947, professor of pharmacy at the University of Wisconsin.

George Urdang is one of the most outstanding historians of pharmacy; his *History of Pharmacy*, published in cooperation with Edward Kremers (Philadelphia 1940), his many other publications and indefatigable endeavors on behalf of the American Institute of the History of Pharmacy have made him a person of great international repute and the recipient of many honors. Now that he has reached his seventieth year, he will retire from his academic duties—but not from his work, as all his friends are sure. The *Bulletin* extends its cordial felicitations to George Urdang on the occasion of his birthday.

The Faculty of the University of Wisconsin School of Pharmacy will honor Professor Urdang with a dinner on June 13, on which occasion the establishment of a George Urdang Medal will be formalized.

Baltimore

The Johns Hopkins Medical History Club held a meeting on April 16, 1952, with the following speakers:

Richard S. Ross: "John Davy, Physician, Brother of Sir Humphry."
Chauncey D. Leake: "The Old Egyptian Medical Papyri, especially the Hearst Papyrus."

Chicago

A series of free lectures on the history of medicine is being offered by the medical school of Northwestern University at Thorne Hall. The final lecture will take place on June 4, 1952 (*J.A.M.A.* vol. 148, April 26, 1952, p. 1513).

Cincinnati

The hundredth anniversary of the death of Daniel Drake will be commemorated on Tuesday, May 27, 1952, under the joint auspices of the University of Cincinnati and the Cincinnati Academy of Medicine. The program foresees a ceremony at the grave of Daniel Drake in the afternoon and a convocation in the evening at the auditorium of the College of Medicine where Dr. Emmet Field Horine will deliver the address.

Committee on Medical History and Archives, Ohio State Archaeological and Historical Society

At the annual meeting of this society on April 5, 1952, the following scientific program was presented under the chairmanship of Linden F. Edwards:

Gilbert F. Dodds: "Dr. Jabez True, First Permanent Physician in the Ohio Country"
Mrs. James H. Rodabaugh: "High Lights of the History of Nursing in Ohio"
Jonathan Forman: "Pathology in the Medical Colleges of Columbus"
Bernard V. Christensen: "History of Pharmacy in Ohio"

Norman Dohn: "Albert M. Bleile, M. D."
Linden F. Edwards: "The Oldest Medical College Hospital in the United States—St. Francis Hospital, Columbus, Ohio"
Edwin C. Mills: "Proposed Social Security for the Self Employed"
Howard Dittrick: "Fairfield Medical School, An Ancestor of Ohio Medicine."

Ohio Academy of Medical History

At the thirteenth annual meeting of the Committee on Medical History and Archives of the Ohio State Archaeological and Historical Society held in Columbus, Ohio, April 5, 1952, a new organization, entitled "The Ohio Academy of Medical History," was formed to supplant the now defunct Committee on Medical History. Following the adoption of a constitution, which provides for joint membership with the Ohio State Archaeological and Historical Society and constituent membership with the American Association of the History of Medicine, the following officers were elected for the year 1952-1953: President, Linden F. Edwards, Vice President, Howard Dittrick, M. D.; Secretary-Treasurer, John O. Marsh.

The Committee on Medical History and Archives was organized in 1937 and held its first formal meeting May 12, 1938, in connection with the annual meeting of the Ohio State Medical Association, since which time its annual meetings have been held with those of the Ohio State Archaeological and Historical Society. That its aims and purposes, namely, the discovery and preservation of materials bearing upon the medical history of Ohio, were well realized during its existence, is evident from the fact that over 200 original articles by its members have been published in various journals.

The purpose of the newly organized Ohio Academy of Medical History is to further the general interest in the history of medicine and its allied professions in Ohio. All persons interested in this objective are eligible to membership.

NEWS FROM ABROAD

Havana

On the occasion of the centenary of the birth of Santiago Ramon y Cajal, the Biblioteca Nacional has published the following booklet: *Catalogo de la Exhibición de Impresos Referentes a Don Santiago Ramon y Cajal con motivo del Centenario de su Nacimiento.* Selección y Notas por el Dr. Rodolfo Tro; Introducción por el Dr. Manuel M. Villaverde; Palabras Liminares por Lilia Castro de Morales. Habana: Biblioteca Nacional, 1952.

The "Ateneo de la Habana" is offering a course on the most outstanding Cuban physicians around the turn of the century. The lectures are delivered by leading specialists under the direction of the president of the medical section of the Society, Dr. Manual M. Villaverde (Corresponding Member of the American Association of the History of Medicine), and Dr. Octavio Montoro, one of the most prominent physicians in Havana. At present, about 40 lectures have been given; the entire course is to cover about 50 names.

London

A memorial plaque was unveiled on February 14, 1952, in the crypt of the church of St. Martin-in-the-Fields, Trafalgar Square, where the remains of John Hunter had lain from 1793 to 1859. A description of the ceremony is given in the *J.A.M.A.* of April 5, 1952, p. 1242.

BOOK REVIEWS

EDWARD M. BROCKBANK. *John Ferriar: Public Health Work, Tristram Shandy, Other Essays and Verses. William Osler: His Interest in Ferriar, Biographical Notes.* London: William Heinemann, 1950. 53 pp. Frontispiece. 6s.

Thirty years ago in the *Annals of Medical History,* Dr. John Ruhräh wrote:

> Ferriar was a keen student of literature, a linguist of ability, of wide reading, of much culture, no mean poet, a clever essayist, a wise, skillful physician, perhaps best of all, a most distinguished critic. Surely the memory of such a paragon needs to be kept from the dust of oblivion.[1]

While, to a certain extent, John Ferriar (1761-1815) has been kept from the dust of oblivion, it is still true now as it was in 1921 that "Few physicians today who do not lean to literature have ever heard of Ferriar."[2]

Of more than fifty histories of medicine and hundreds of articles I have examined, only a mere handful as much as mention Ferriar. The *Dictionary of National Biography* has a one-page account of him by C. W. Sutton,[3] and in the 1949 edition of *The Encyclopaedia Britannica* he is entirely absent, although in the Eleventh Edition he is referred to under Laurence Sterne.[4] Indeed, it is in connection with Sterne that the Manchester physician will continue to be most likely remembered for *Illustrations of Sterne with other Essays and Verses,* Ferriar's still important treatise on the literary borrowings of the author of *Tristram Shandy.*

In the translated and revised edition of Joh. Hermann Baas's *Outlines of the History of Medicine and the Medical Profession,* the translator, H. E. Handerson, has added one sentence: "John Ferriar (1763-1815) of Manchester and John Johnstone (1768-1836) of Birmingham, were likewise eminent alienists."[5] (Even here, Ferriar's birth-year is wrong.) Sir Arthur Newsholme's *Evolution of Preventive Medicine* does a little better: "Dr. John Ferriar (*Medical Histories and Reflections,* 4 vols., 1810-1813), writing about a . . . House [of Recovery] erected in Stockport, said 'I believe there is not a town in the Kingdom containing four thousand inhabitants which could not be greatly benefited by similar establish-

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[1] John Ruhräh, "John Ferriar (1761-1815)," *Annals of Medical History,* 3: 353, Winter 1921.

[2] *Ibid.,* p. 351.

[3] C. W. Sutton, "Ferriar, John," *Dictionary of National Biography,* edited by Leslie Stephen (New York: Macmillan and Co.; London: Smith, Elder, & Co., 1889), 18: 389-390.

[4] William Minto and Henry Austin Dobson, "Sterne, Laurence," *The Encyclopædia Britannica* (Eleventh Edition; Cambridge, England: At the University Press, 1911), 25: 903. See also H. D. Traill, *Sterne* (English Men of Letters; New York: Harper & Brothers, 1882), pp. 126-138, for chapter on "Dr. Ferriar's 'Illustrations.'"

[5] Joh. Hermann Baas, *Outlines of the History of Medicine and the Medical Profession,* translated and revised by H. E. Handerson (New York: William R. Jenkins Co., 1889 [1910]), p. 713.

ments' . . . In 1795, largely owing to the advocacy of [Sir Thomas] Percival, assisted by Ferriar, a voluntary Board of Health was formed in Manchester."[6]

Sir William Osler, with his literary interests and his wide historical background, naturally did justice to Ferriar, referring to him in his letters,[7] his lectures,[8] and eight times in *Bibliotheca Osleriana*. In this catalogue of his library, Sir William lists Ferriar in "Secunda," among those not quite of first rank in medical history, citing two works *Medical Histories and Reflections* (1792 and 1810 editions),[9] and *An Essay towards a Theory of Apparitions* (1813);[10] in "Litteraria" with Illustrations of Sterne (1798 and 1812 editions);[11] and in "Bibliographia" for *Bibliomania* (1809).[12] W. O.'s note under *Illustrations* mentions Ferriar's "urging the establishment of baths, improved housing, and shorter hours for children in factories." Osler shows his well-known gift for historical priority by commenting under *Bibliomania*: "The N. E. D. gives a quotation from Dibdin under Bibliomania, not Ferriar who antedated D's publication several months and was really the inspirer of it."

Garrison's history of medicine omits Ferriar in its Third Edition (1924), but in the Fourth Edition five years later says: "In keeping track of the course of communicable diseases by the bills of mortality, remarkable work was done by such pioneer epidemiologists as Haygarth at Chester (1772-81), Percival (1772-6) and Ferriar (1790-1804) at Manchester . . ., almost the only physicians of the time who followed these diseases among the poor."[13] Neither Victor Robinson's *Pathfinders*[14] nor Henry E. Sigerist's *Great Doctors*[15] mention Ferriar, but two more recent histories take him into account: Richard Harrison Shryock writing, "Noteworthy were the services of Thomas Percival (1740-1804) and John Ferriar (1761-1815), who served in the Manchester Infirmary, investigated homes and factories, led to the establishment of the Manchester Fever Hospital, and preached both general sanitary and factory reform."[16] And Bernhard F. Stern mentions

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[6] Sir Arthur Newsholme, *Evolution of Preventive Medicine* (Baltimore: The Williams & Wilkins Company, 1927), p. 108.

[7] Harvey Cushing, *The Life of Sir William Osler* (Oxford: At the Clarendon Press, 1925), 1:579, 615; 2:85, 511-512.

[8] See, for example, Sir William Osler, "The Student Life," *Aequanimitas* . . . (Third Edition; Philadelphia: P. Blakiston's Sons & Co., Inc., 1932), p. 400.

[9] Sir William Osler, *Bibliotheca Osleriana* (Oxford: At the Clarendon Press, 1929), Nos. 2579, 2580.

[10] *Ibid.*, No. 2581.

[11] *Ibid.*, Nos. 4805, 4806.

[12] *Ibid.*, No. 7042.

[13] Fielding H. Garrison, *An Introduction to the History of Medicine* (Fourth Edition; Philadelphia and London: W. B. Saunders Company, 1929), p. 404. See also, p. 838, in the Chronology of Medicine and Public Hygiene, for the year 1790: "John Ferriar reports on diseases at Manchester."

[14] Victor Robinson, *Pathfinders in Medicine* (New York: Medical Life Press, 1929).

[15] Henry E. Sigerist, *The Great Doctors* (New York: W. W. Norton & Company. Inc., 1933).

[16] Richard Harrison Shryock, *The Development of Modern Medicine* (Philadelphia: University of Pennsylvania Press, 1936), p. 90.

Ferriar among thirteen physicians who have led movements to overcome unsanitary slums, poor factory conditions, and child welfare and education.[17]

The only recent article on Ferriar is a brief one: in reprinting Ferriar's "Advice to the Poor" in the *Bulletin of the History of Medicine* as a piece of humanitarianism which overlooks economic factors, George Rosen says that it is "a document hitherto largely unnoticed in the history of public health."[18] Finally, and as briefly as the others, Arturo Castiglioni dismisses Ferriar as accidentally observing the connection between acute rheumatism and heart disease.[19]

There comes now, however, a new study of John Ferriar and Sir William Osler, by Dr. Edward M. Brockbank, who first began writing about Ferriar in 1903 with the encouragement of Osler, to whom he dedicates the little book. Unfortunately, despite our being asked to make "every allowance for its Shandyan discursiveness and other shortcomings," the work is a disappointment on many counts. Physically, the book is poorly designed, printed, and bound; there is no printing on the spine, nor a spine label. An example of its careless printing is in the section on Sterne (pp. 17-25), which for no apparent reason, contains no less than four different type sizes for the five subheads. There are folio numbers on blank pages (pp. 42 and 43), and the paragraphing makes no sense at all: there are thirteen paragraphs on pp. 34-35, containing in all 481 words, eleven of the paragraphs being one sentence, and two of two sentences. Nor is there much consistency in the use of italics and quotation marks for titles of books and essays referred to. Worst of all, looking at the seven lines used as the title of the book itself on the title-page, one is hard put to discover just what the volume is all about. Only after reading the book through is it clear that Dr. Brockbank has written a discursive account of Ferriar's life and writings (which takes up the first 41 pages), and some comments on Osler at Manchester and his interest in Ferriar (which take up 8 pages). Even on the last page of the text there is lingering doubt as we read that Osler "thought that a reprint of [Ferriar's] literary work would be a proper tribute to him. This, though very belated, I have attempted to do now." The present volume is no such thing.

Practically all of the scholarship on Ferriar, which I have outlined in this review, Dr. Brockbank has overlooked. Furthermore, the writing, too, lacks much grace and smoothness, as if it had been printed from loosely organized notes. On p. 15, for example, we read that Ferriar's library "became the property of his daughter, who never married"; and on the very next page, in a paragraph all by itself (after a previous paragraph on Ferriar's children) we read: "The daughter was unmarried." On p. 39 occurs this awkward sentence: "Osler in a farewell address on leaving America on 'Student Life,' said that one who does easily well what others cannot do at all, or very badly, was John Ferriar's excellent description of a genius." What Osler actually said was: ". . . now and again one of you will

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[17] Bernhard F. Stern, *Society and Medical Progress* (Princeton: Princeton University Press, 1941), p. 174.

[18] George Rosen, "Ferriar's 'Advice to the Poor,'" *Bulletin of the History of Medicine*, 11:223, February 1942. Ferriar's essay is on pp. 224-227.

[19] Arturo Castiglioni, *A History of Medicine*, translated and edited by E. B. Krumbhaar (New York: Alfred A. Knopf, 1941), p. 705.

be found who does easily and well what others cannot do at all, or very badly, which is John Ferriar's excellent definition of a genius." One last example of carelessness: on p. 26, Dr. Brockbank cites Castiglioni as saying that "Ferriar is credited with being the first English physician to recognise the connection between acute rheumatism and heart disease." Castiglioni actually wrote: "The recognition of the connection of acute rheumatism with one of the most important forms of heart disease is chiefly due to English acumen. The mere association of the two conditions, to be sure, had been observed by Morgagni, also by Ferriar of Manchester, but had been regarded as accidental."[20] Finally, note this from Dr. Brockbank (p. 29), without quotes: "All things considered, therefore, there is good evidence that to English acumen is due the recognition of acute rhematism as a most important cause of heart disease."

As the author says in his preface, "All who read the Alabama Student and Osler's other biographical essays will regret that he had not had the time to take up Ferriar himself." There is no doubt that John Ferriar, now relegated to a small place in the bibliographies of Laurence Sterne, deserves a better recognition in the history of medicine. All the data that Dr. Brockbank presents are a confirmation of this—it is simply a pity that they could not have been presented with more clarity, charm, and completeness. Yet we do owe the writer of the present book thanks for shedding some light on an overlooked figure.

WILLIAM WHITE

LEONARD ROGERS. *Happy Toil.* Fifty-five Years of Tropical Medicine. Foreword by Sir John W. D. Megaw. London: Frederick Muller, Ltd., 1950. xvi + 271 pp. Ill. 18 s.

The name of Sir Leonard Rogers is a household word to all interested in tropical medicine. A history of his life is to a large extent a history of tropical medicine during the last 50 years. Sir Leonard was born in 1868, one of the 13 children of a Royal Navy captain. After graduation in London he joined the Indian Medical Service in 1893, as this seemed to be the only way to satisfy his desire for research. Like Sir Ronald Ross and many others he was to find out that such work was not exactly facilitated by the colonial bureaucracy.

He started his scientific work in India with investigations on kala-azar in Assam in 1896. He established the transmissibility of the disease; in 1915 he was to find the tartar emetic treatment.

Sir Leonard's greatest accomplishments in India are probably the differentiation of amoebic and bacillary dysentery, the proof of the causation of liver abscesses by the former, and the introduction of an effective and lifesaving treatment after 1900; furthermore, the introduction of a curative treatment of cholera after 1906.

Even any one of his minor deeds in India: development of an effective inoculation for cattle plague, demonstration of the large scale existence of typhoid in India, studies on snake venom and invention of the first aid treatment by permanganate,

[20] *Ibid.*, p. 705.

would alone have been sufficient to establish a brilliant reputation as a scientist and physician for Sir Leonard.

After having crowned his work in India with the foundation of The Calcutta School of Tropical Medicine and Hygiene, Sir Leonard retired in 1920 and returned to England. His "retirement" has been filled with such tremendous accomplishments as the introduction of effective treatment of leprosy and the foundation of the famous British Empire Leprosy Relief Association. Application of his leprosy treatments to tuberculosis proved less successful. Extensive studies in epidemiology enabled Sir Leonard to forecast reliably epidemics in India. He also took the lead in the counter-attack against anti-vivisectionism by the Research Defense Society. Sir Leonard is dear to all medical historians on account of the excellent historical introductions to his books on *Fevers in the Tropics,* and on *Leprosy.*

This report of his life shows the author as a man of fabulous industry and will power. Deep concern with scientific problems is in this great doctor always admirably combined with a strong bend towards the practical, applicable, helpful. The interest of the book lies less in the style which is straightforward and of a certain military dryness, than in the facts recorded. But what facts!

ERWIN H. ACKERKNECHT

ROBERT STRAUS. *Medical Care for Seamen.* The Origin of Public Medical Service in the United States (Merchant Seamen Studies, I). New Haven: Yale University Press, 1950. xvi + 165 pp. $3.75.

In *Medical Care for Seamen* Robert Straus has set out "to identify the condition under which the federal government has entered the field of medical services; and . . . to lay a foundation for determining future trends in public medical care." He has examined his problem against the history of the United States, its political and social settings from 1789 to the present. Seamen have always made up the muscle of any merchant marine. Yet in the American experience they have been treated little better than social pariahs. Ship discipline has held down the sailor on sea. Long and irregular hours of work, poor and insufficient food, wretched living quarters, the rigors of weather, the ingratitude of superiors, and the sufferings from disease have all helped to whittle down his life span; for he has been viewed less as a person but more as a means to the end of greater profits for ship owners. At home the sailor has been confined to dock areas. Here he has become the prey of crimps and a loneliness that seeks relief in drink. The injuries of isolation have produced men whose abilities to care for themselves have been destroyed. They have weighted the burdens of a society already charged with the duty of protecting members.

In the first seventy years of our national existence Americans wanted a weak central government. They were more suspicious of arguments for a strong executive than the marks of ineptitude and graft which characterized their Marine Hospital Service. 1870 brought a broad reorganization of this division; it marked the start of those developments that culminated in the Public Health Service. In this period

doctors of the marine hospital made their first efforts to understand the seaman in his social setting.

Since 1870 the picture has been one of gradual social betterment. The present day sailor continues undersocialized, although he is not regarded as a misfit. He does not enjoy the benefits of medical and social security which the leading European powers now provide their merchant seamen. The American mariner finds himself among several groups to whom the government owes care. Rising medical costs are becoming more than he can hope to pay; he cannot command the proper medical facilities and attendance. He represents one aspect of the public concern over the general health of our nation.

Medical Care for Seamen is worth reading. Much of its pleasure comes from the number of questions which Straus raises, while discussing his subject from many angles. Occasionally he uses the special language of the education department. Taking pains to define undersocialization, Straus obscures his definition with the word "syndrome." Sometimes he speaks of "philosophy" when point of view or attitude might have been more exact and simple. But the treatise is generally free from jargon and careless diction. Men like Dr. S. Billings, Dr. John M. Woodworth, and Andrew Furuseth appear as public and official leaders. *Medical Care for Seamen* might have been drawn more sharply, had the writer consulted private opinion. But Straus does not rely on manuscript collections; he draws on reports and secondary sources with remarkable compression. Issues are therefore seen in their broad historical and cultural significance.

WILLIAM Q. MAXWELL

THE BULLETIN RECENTLY RECEIVED *

William A. R. Chapin and Lyman Allen (editors). *History, University of Vermont College of Medicine.* n.p., n.d. 162 pp. Ill. $5.00.

Robert Coope. *The Quiet Art.* A Doctor's Anthology. Edinburgh & London: E. & S. Livingstone, 1952. 284 pp. Ill. $3.00.

The Collected Papers of Adolf Meyer. Ed. Eunice E. Winters. Vol. IV: Mental Hygiene. With an Introduction by Alexander H. Leighton. Baltimore: The Johns Hopkins Press, 1952. xxviii + 557 pp. Ill.

Philip Marshall Dale. *Medical Biographies.* The Ailments of Thirty-three Famous Persons. Norman: University of Oklahoma Press, 1952. xii + 259 pp. Ill. $4.00.

Donald Fleming. *Science and Technology in Providence, 1760-1914.* An Essay in the History of Brown University in the Metropolitan Community. Providence, R. I.: Brown University, 1952. 54 pp. Ill. $1.25.

Jeannette E. Graustein. *Nuttall's Travels into the Old Northwest.* An Unpublished 1810 Diary. *Chronica Botanica.* Vol. 14. No. 1/2. Waltham, Mass.: The

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* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section.

Chronica Botanica Co.; New York City: Stechert-Hafner, Inc., 1950/51. 88 pp. Ill. $3.00.

George W. Heuer. *Dr. Halsted.* Supplement to *Bulletin of the Johns Hopkins Hospital,* volume 90, No. 2, February, 1952. Baltimore: The Johns Hopkins Press, 1952. 105 pp. Ill.

Geoffrey Keynes (editor). *The Apologie and Treatise of Ambroise Paré.* Containing the Voyages made into Divers Places, with Many of His Writings upon Surgery. Chicago, Ill.: The University of Chicago Press, 1952. xxiii + 227 pp. Ill. $3.50.

Francis Marion Pottenger. *The Fight Against Tuberculosis.* An Autobiography. New York: Henry Schuman, 1952. xii +276 pp. Ill. $4.00.

Esther Gaskins Price. *Pennsylvania Pioneers Against Tuberculosis.* New York: National Tuberculosis Association, 1952. 294 pp. Ill. $5.00.

Charles Singer. *Technology and History.* L. T. Hobhouse Memorial Trust Lecture No. 21. London: Geoffrey Cumberlege, Oxford University Press, 1952. 19 pp. 2 s.

Harley Williams. *Doctors Differ.* Springfield, Ill.: Charles C. Thomas, 1952. xvii + 239 pp. Ill. $5.50.

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